SKYWAY WATER & SEWER DISTRICT

GUIDELINES

FOR

CONSTRUCTION OF WATER AND

SANITARY SEWER FACILITIES

SKYWAY WATER & SEWER DISTRICT

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GENERAL PROVISIONS – WATER AND SEWER

1 General

The Skyway Water & Sewer District Developer Guidelines are designed to provide developers, engineers, and home owners guidance, useful tools, and support for completing water and sewer line extensions and obtaining water and sewer service within the boundaries of the District.

If the developer/property owner will be extending the District's water and/or sewer system, they will need to follow the developer extension process. An extension of the District's system(s) is required for projects where water and/or sewer mains, or other facilities, are provided for the provision of new service. Other special circumstances may also require a developer extension agreement and will be treated on a case-by-case basis.

This Manual is organized in three sections plus appendices. The sections include a general section, a water section, and a sewer section. This section of the Manual, being the general section, includes information that will guide the property owner through the water/sewer line extension or service process. This section contains definitions, permitting, and plan requirements, and describes the entire water/sewer line extension process from request for availability to final Board of Commissioners' acceptance of the project. The water and sewer sections contain detailed design criteria that pertain to the appropriate utility. These sections provide information the engineer will use to design water and sewer main line extensions in the Skyway Water & Sewer District. These sections also contain standards property owners must follow to install individual services when a mainline extension of the utility is not required.

1.1 Definitions

The following terms are used in this contract shall be defined and interpreted as follows:

"**BMP**": Best Management Practice, generally referenced in this Manual as regarding, but not limited to the Endangered Species Act, storm drainage discharges, erosion control, and sediment control.

"**Contract**" or "**This Contract**": The application for permission to construct an extension to the water system and/or sanitary sewer system executed by the Developer and the District of which these general provisions are an integral part.

"**Contract Drawings**" or "**Drawings**": All drawings or plans prepared by the Developer's Engineer.

"**Contract Documents**": All forms, drawings, applications, and agreements pertaining to a water and or sewer extension project as required by the District.

"**Contractor**": The person or firm, acting as an agent of the Developer, who actually constructs the water and/or sanitary sewer improvements. This may be the same party as the Developer.

"**DDES**": Department of Development and Environmental Services

"**Department of Ecology (DOE)**": The Washington State Department of Ecology

"**Department of Health (DOH)**": The Washington State Department of Health unless otherwise noted.

"**Developer**": The person, partnership, firm, or corporation owning the property to be benefited by the proposed extension, having an agreement with the District to cause the installation of water and/or sanitary sewer improvements to become a part of the District water or sanitary sewer system upon completion and acceptance. The term shall also include the Developer's agents, engineer, employees, and contractor.

"**Developer's Engineer**": The Engineer, licensed in the State of Washington, who has been retained by the Developer to design and prepare the Plans for the work to be performed under the Contract in accordance with District Specifications.

"**Developer's Equipment**": The phrase "developer's equipment" shall include all items of materials or equipment including all tools, machinery, and vehicles remaining in the developer's ownership and removed from the site upon completion of the project.

"**District**": The Skyway Water & Sewer District

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

"**Engineer**": The District's Engineer or their duly authorized agent, acting as Engineer for the District.

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

"**Extension**": The system of water or sewer mains and appurtenances or other water or sewer system improvements to be constructed in whole or in part through the performance of this Contact.

"**General Manager**": General Manager means the General Manager of the Skyway Water & Sewer District.

"**Maintenance Bond**": A bond or other financial guarantee approved by the District, furnished by the Developer, and written by a corporate body qualified to write surety in the State of Washington, that warrantees the water and/or sewer improvements installed by the Developer for a period of 2 years upon completion of construction and acceptance by the District.

"**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.

"**Orange Book**": The Washington State Department of Ecology's "Criteria for Sewage Works Design", the current edition

"**Or Equal**": Any manufactured article, material, method, or work which, in the opinion of the Engineer, is equally desirable or suitable for the purposes intended in these specifications and contract as compared with similar articles specifically mentioned herein.

"**Performance Bond**": A bond or other financial guarantee approved by the District, furnished by the Developer, 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.

"**Plans**": Drawings, including reproductions thereof, of the work to be done as an extension to the District's water and/or sanitary sewer system, prepared by the Developer's Engineer and approved by the District, the District Engineer, and the District Board of Commissioners.

"**Points**": Wherever reference is made to the Developer's Engineer's points, this shall mean all marks, bench marks, reference points, stakes, hubs, tacks, etc., established by the Developer for maintaining horizontal and vertical control of the work.

"Redevelopment": Redevelopment shall be defined as occurring when a building is enlarged, or when a building is or has been removed and is proposed to be re-built.

"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.

"**Sanitary Sewer**": The term "sanitary sewer" and "sewer" shall both mean sanitary sewer unless otherwise noted.

"**Sewer**": See "Sanitary Sewer".

"**Sewer Service Stub**": That portion of a sewer service 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.

"**Shop Drawings**": All shop details, drawings, illustrations, schedules, performance charts, brochures and other data prepared by the contractor or a subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the work, unique to the subject project, shall be fabricated. The Developer shall furnish shop Drawings as required, and as provided for in the Specifications.

"**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.

"**Skyway**": The Skyway Water & Sewer District

"**Specifications**": The specifications shall mean the prescribed requirements, explanations, terms, guidelines, and provisions pertaining to the various features of work to be done or manner and method of performance and the manner and method of measurements and payments. They also include requirements and explanations as set forth in the plans.

"**Standard Specifications**": The latest edition of the WSDOT Standard Specifications For Road, Bridge and Municipal Construction adopted by the District, including the APWA Supplement to Division 1 contained therein.

"**Surety**": Any firm or corporation executing a surety bond or bonds payable to the District securing the performance and maintenance of the contract either in whole or in part.

"**UBC**": Uniform Building Code, most current edition

"**UPC**": Uniform Plumbing Code, most current edition

"**Water Service**": That portion of a water service line on private property that extends from the District water meter. The water service shall meet the requirements of the Uniform Plumbing Code, and be owned and maintained by the Developer/property owner.

"**Water Service Stub**": That portion of a water service line extended from the District water main to, and including, the water meter and meter box. The water service stub shall be owned and maintained by the District following the District's acceptance of the project.

"**Work**": All labor, tools, materials, equipment, construction equipment, working drawings where required, and other necessities for the construction of improvements shown and called for in the plans, specifications, and contract, and the act of constructing such improvements.

"WSDOT": Washington State Department of Transportation

1.2 Developer Extension – Project Process Flowchart

The flowchart on the following page describes the major steps involved with extending the District's water and/or sewer system. This Manual is organized to follow the flowchart to make it easy for the developer to locate additional information about each flowchart item.

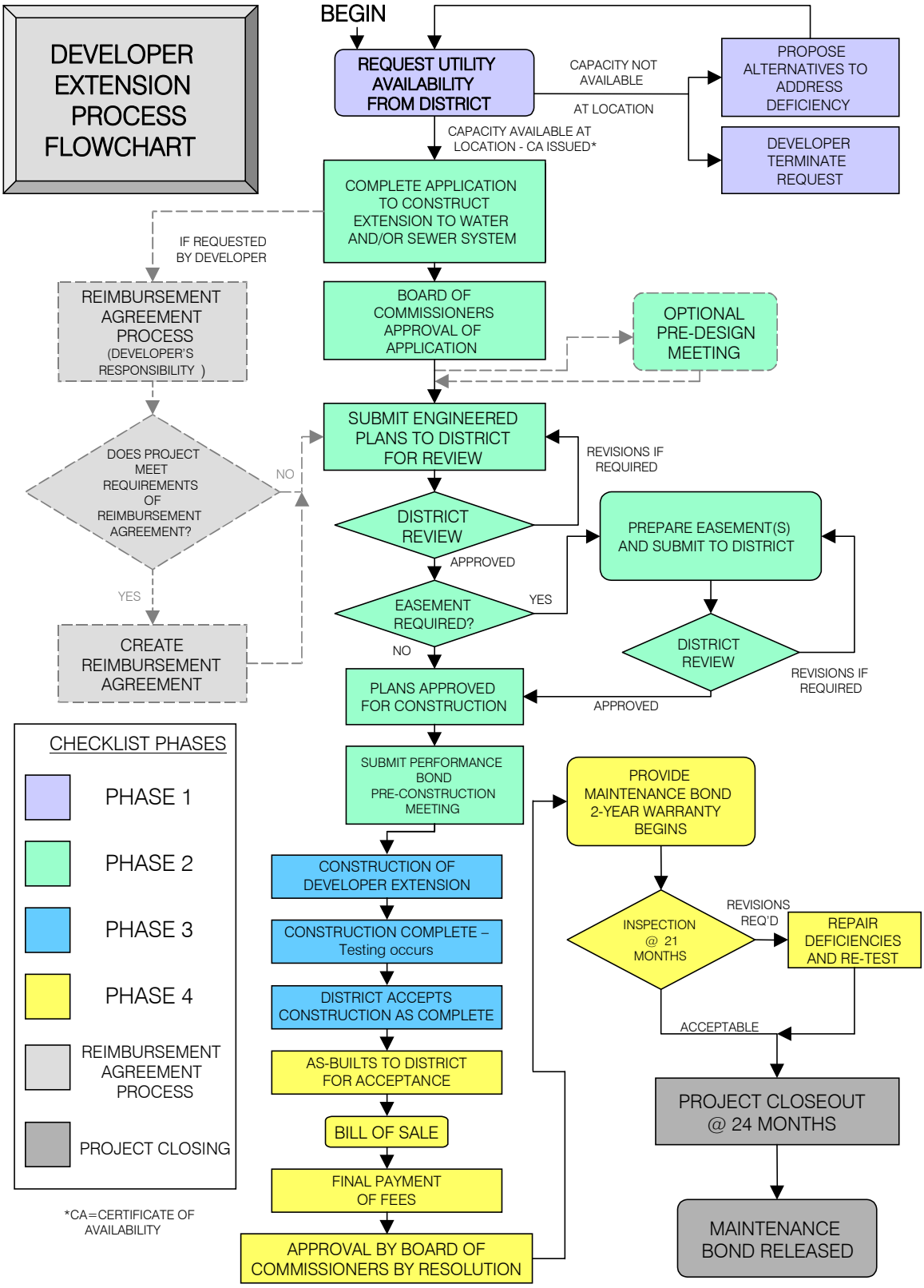


Figure 1: Developer Extension – Project Process Flowchart

1.3 Water and Sewer Service Process Flowchart

The following flowchart describes the steps involved with obtaining water and/or sewer service to individual properties where extensions are not required.

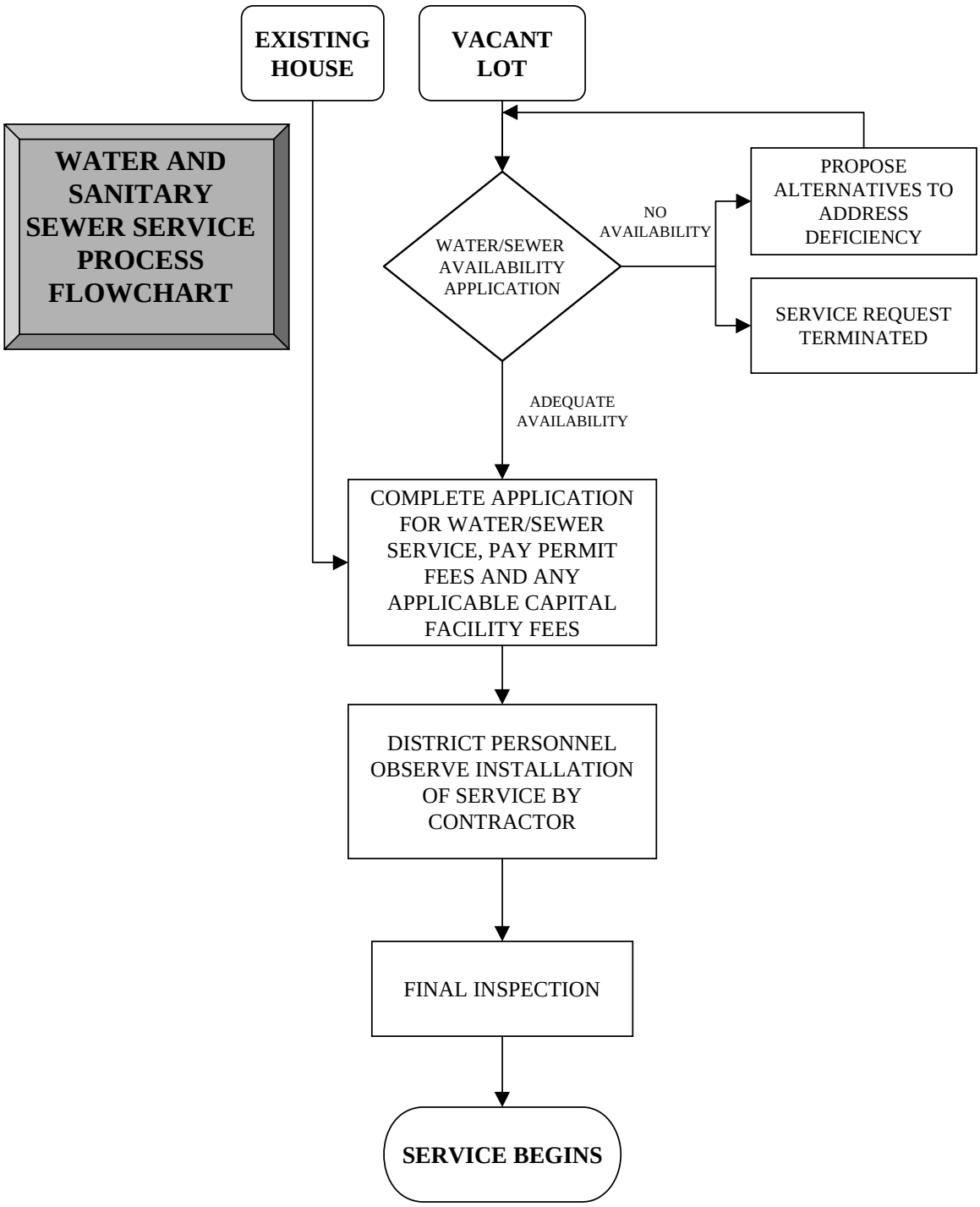


Figure 2: Water and Sewer Service Process Flowchart

1.4 Request for Water/Sewer Availability

The Seattle/King County Department of Public Health and the Department of Development and Environmental Services require property owners to obtain a Certificate of Water/Sewer Availability to aid them in evaluating development proposals. The forms for this can be obtained from King County Department of Development and Environmental Services, 900 Oakesdale Avenue Southwest, Renton, WA 98055-1219.

The District must complete these forms if the subject property is within its service area. To assist in completing the King County Certificate of Water and/or Sewer Availability, the District requires the completion of an Availability Certificate Request form as found in **Appendix A** of this Manual. The property owner must provide the information about the proposed development and pay the appropriate fee before the District can complete the Certificate. Once all requirements are met, the District may take up to 10 working days to do the required research and complete the Certificate, and will notify the applicant when it is ready. The property owner must submit the Certificate to King County.

1.5 Water and Sewer Facility Improvement Requirements

The Skyway Water & Sewer District requires that improvements to the public water and sewer system infrastructure by developers and/or owner's of individual lots be extended across the development's/property's frontage to the frontage of the neighboring lot, or across the property to the neighboring lot. The layout of extensions shall provide for the future continuation of the existing system as determined by the District. Exceptions may be made for instances of dead end main for which there is no potential to be extended in the future.

Water and sewer mains on platted cul-de-sacs shall extend to the plat line beyond the cul-de-sac to the neighboring property for a future connection.

The developer/property owner may be required to extend a water main beyond this requirement in the instances where looping of the water system will provide needed fire flow to the proposed improvement, or when the development increases the burden of maintaining water quality or increases maintenance to the District.

A two-inch blow-off assembly shall be provided on dead end water mains 8-inches diameter and smaller. A fire hydrant shall be installed on larger dead end water mains to accommodate flushing velocities.

1.6 Application to Construct Extension to Water and/or Sewer System

For extension of water and/or sewer facilities, the Developer must provide a completed Application for Permission to Construct Extension to Water and/or Sewer Systems as found in **Appendix C** of this Manual. The Developer, simultaneously with the execution of the Application, shall deposit fees with the District for administration, engineering, legal, permitting, and allied cost for each for the water and sewer utilities.

The District fees and bonding requirements (for developer extension projects) are outlined in the documents contained in **Appendix B** and **Appendix D** of this Manual. The District requires a

15% administrative fee for all expenses and administrative fees including legal, engineering, agency review, and recording fees.

The Developer's insurance requirements, and the Bill of Sale form which transfers ownership of the water and/or sewer main facilities to the Skyway Water & Sewer District following acceptance of the project are contained in **Appendix D**.

The Developer shall use and keep current the Water and Sewer Developer Extension Checklists found in **Appendix F**. These checklists will be submitted to the District with each design review submittal, upon completion of construction, with the submittal of Post Construction documents to the District, and at any other time during the duration of the project as requested by the District.

1.7 Reimbursement Agreements

The Developer may apply for a reimbursement agreement with the District for the installation of water and/or sanitary sewer facility extensions within the District. A reimbursement agreement allows Developers an opportunity to recoup some of the project costs associated with the design and construction of water and/or sanitary sewer facilities that directly offer benefit to other properties in the District as outlined in the following paragraph.

When a Developer installs a water or sanitary sewer extension, reimbursement payments outlined in the reimbursement agreement will be made to the Developer, under the terms of the agreement, as properties adjacent to the extension connect within the time limits outlined in the reimbursement agreement. The agreement will include a tributary service area map as determined by the District that defines the properties directly benefiting from the extension. When one of these properties connects to the system installed by the Developer within the terms of the agreement, the Developer will be eligible to receive a reimbursement payment as outlined in the reimbursement agreement. If the Developer installs a regional facility such as a sanitary sewer pump station that qualifies for reimbursement, the tributary service area map shall include properties that are intended to be served by the pump station. In all cases, the District will have the authority to determine the tributary area of all proposed facilities prior to completing the agreement.

A request for a reimbursement agreement is the sole responsibility of the Developer. The application for a reimbursement agreement shall be submitted to the District concurrently with the application to construct an extension to the water and/or sanitary sewer system. During District review of the application, the method of tracking project costs will be determined and documented. The approved method shall include tracking project costs using a detailed cost break down showing individual items pertaining to each utility or type of work. All payment schedules, receipts, invoices, and other records of transaction pertaining to the work agreed to in the reimbursement agreement must be submitted to the District within 30 days of their receipt by the Developer to be considered as reimbursable costs. Reimbursement agreements requested after the plans are approved shall not be considered. Reimbursement agreements are subject to the provisions of Chapter 57.22, RCW.

An example reimbursement agreement can be found in **Appendix D** of this Manual.

1.8 General and Construction Notes

General Notes and the pertinent Utility Notes shall be included on the engineered plans for water and sewer facility extensions are listed in **Appendix I** of this Manual. All general notes and the notes pertaining to the utility being designed must be included on the plans.

1.9 Plan Submittal Requirements

The plans shall be prepared for the Developer by a Professional Engineer licensed in the State of Washington, and the plans shall be checked and approved by the District's Engineer in accordance with the Developer's Agreement.

All plans submitted to the District shall conform to the requirements outlined in this Manual. 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. General construction notes, as well as construction notes pertaining to the appropriate utility that must be included on all plans submitted to the District, are included in **Appendix I** of this Manual. Checklists to aid in developing plan sets that conform to District Standards are included in **Appendix F** of this Manual. A copy of the updated checklist shall be submitted to the District for each plan review.

The plans shall be submitted on a title block containing the information shown on the sample title block in **Appendix H** of this Manual. An electronic version of the sample title block created in AutoCAD format can be obtained from the District. This sample title block shows criteria such as the approval block, revision block, District name and address, scale, date, and other information that is required on all plans submitted to the District. Plans shall be submitted on 22" x 34" title blocks at a 20, 30, or 40 engineering scale. No combined water and sewer plans will be accepted.

The Developer shall submit four (4) sets of proposed Contract Drawings to the District for review. If revisions are required, a District review letter will be sent to both the Developer and to the Development's Owner, and one (1) set of red-lined plans will be returned to the Developer with District comments. The District will make two copies of the red-lined plan review comments for their use, at the Developer's expense. The Developer shall return the previous plan review "mark-ups" with each iteration of their revised proposal submittal.

When the Contract Drawings are ready for approval, the Developer shall submit two (2) sets of mylar drawings for District approval and an electronic version of the Plans compatible with the most current version of AutoCAD. One (1) set of mylar drawings will be returned to the Developer and the other set will be retained by the District from which they will make up to 10 sets of prints for their use, at the Developer's expense. Depending on the scope of the work, the Developer may be required to submit additional copies of the plans to the District.

1.10 Surveys

The Developer shall, at their expense, provide all survey necessary to construct the proposed improvements. Surveys and resultant documents shall be performed and certified by a

Professional Land Surveyor licensed in the State of Washington. The Contractor shall carefully preserve benchmarks, reference points, and stakes, and in case of demolition, shall be responsible for any errors, which may be caused by their absence or disturbance. Lot lines, right-of-way lines, and easements for the subject property and properties adjacent to the utility extension shall be shown on the plans.

1.11 Easements

All required water and sewer easements shall be obtained by the Developer without cost to the District and shall provide for permanent easements and construction easements as shown on the Plans. Easement documents must meet the recording requirements of King County.

All easements that will contain facilities to be owned and operated by the District shall be obtained by the Developer and dedicated to the Skyway Water & Sewer District. These easements will be referred to throughout this Manual as "District" easements. All easements that will contain facilities to be owned and operated by the private property owner, such as side sewers and water services, shall be obtained by the Developer and dedicated to the benefiting property. These easements will be referred to throughout this Manual as "Private" easements.

The Developer shall provide the District with supporting data to verify the location of all easements. A legal description of the easement alignment shall be provided on the easement document. All easements shall be prepared by a Professional Land Surveyor (PLS) licensed in the State of Washington and consist of a tract a minimum of fifteen (15) feet in width. Exception may be granted by the District as applicable to private water or sewer agreements. Easements shall be clearly written in a manner that the easement can be plotted from the description. The Developer shall also, upon request, provide the District satisfactory title insurance insuring without exception the District's interest in all easements conveyed to the District. Sample easements are included in **Appendix E** of this Manual.

All easements shall be approved by the District's legal counsel prior to their recording with King County. Proof of recording of the water and/or sanitary sewer easements on the Developer's property shall be delivered to the District prior to the District's acceptance of construction. Water and/or sanitary sewer easements outside of the Developer's property shall be recorded by the Developer and a copy delivered to the District prior to the District's approval of the design plans.

1.12 Permits

The Developer is responsible for acquiring all the necessary permits required to complete the proposed extension, from the District and any other agency, organization, or landowner. Since the District holds a water and sewer franchise agreement with King County, they will obtain the right-of-way permit(s) from King County upon request to do so by the Developer. No work shall begin until the required permits are obtained. All District costs associated with the acquisition of the permits shall be charged to the Developer.

Any contractor operating under a permit obtained or granted by the District, and/or performs work that will eventually be conveyed to the District, shall be licensed in the State of Washington, and shall meet the District's bonding and insurance requirements.

The Contractor/Developer shall conform to the most recent version of WSDOT's ESA Best Management Practice's (BMP's) Guidelines, and follow the State and King County ESA 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.

1.13 Shop Drawings

The Developer shall submit, with such promptness as to cause no delay in their own work or in that of any contractor, four (4) copies of all shop drawings required for the work of the various trades in the performance of the work or where requested by the District, and shall verify all field measurements or conditions to which the shop drawings are applicable. The District shall review them within ten (10) working days after receipt of the submittal, making comments relative to corrections, including those related to design and artistic effect. The District will return two (2) sets of the reviewed drawings to the Developer (for the contractor and designer). The Developer shall make any corrections required by the District, make the required corrections and submit four (4) corrected copies to the District. The District's acceptance of such drawings or schedules shall not relieve the Developer from responsibility for deviation from drawings or specifications, nor relieve the Developer from the responsibility of verifying dimensions, nor shall it relieve the Developer from responsibility for errors in shop drawings or schedules.

1.14 Material Submittals and Samples

A letter of transmittal showing the date of transmittal, specification section or drawing number to which the submittal pertains, and a brief description of the material submitted shall accompany each submittal. Material submittals shall be submitted to the District and approved prior to that item's installation. It is recommended that materials or parts not be ordered prior to review and acceptance by the District.

The Developer shall submit the specified information as follows:

1. One (1) reproducible original of all the submitted information. When individual sheets in the submittal exceed 8-1/2 inches x 11 inches, a reproducible document shall be submitted.

2. Three (3) copies (in addition to the reproducible original) of all the submitted information. The original and one (1) copy will be retained for the District's records. Two (2) sets will be returned to the Developer (for the contractor and supplier).

The Developer shall designate each item to be reviewed for the project by placing an “arrow” next to that item. Submittals without the proposed items for use not being designated will be returned to the Developer without being reviewed.

Unless otherwise specified, within ten (10) working days after receipt of the submittal, the Engineer shall review the submittal and return two (2) copies of the marked-up reproducible original noted in 1 above. The reproducible original will be retained by the District. The returned submittal shall indicate one of the following actions:

1. If the review indicates that the material, equipment or work method complies with the project Specifications, submittal copies will be marked "NO EXCEPTIONS TAKEN." In this event, the Contractor may begin to implement the work method or incorporate into the project the material or equipment covered by the submittal.

2. If the review indicates limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED". The Contractor may begin implementing the work method or incorporating into the project the material and equipment covered by the submittal in accordance with the noted corrections.

   Where submittal information will be incorporated in O&M data, the corrected copy shall be provided.

3. If the review reveals that the submittal is insufficient or contains incorrect data, copies will be marked "AMEND AND RESUBMIT." Except at his own risk, the Contractor shall not undertake work covered by this submittal until it has been revised, resubmitted, and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

4. If the review indicates that the material, equipment, or work method does not comply with the project specifications, copies of the submittal will be marked "REJECTED - SEE REMARKS." Submittals with deviations that have not been identified clearly may be rejected. Except at his own risk, the Contractor shall not undertake the work covered by such submittals until a new submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

The Engineer shall review all submittals for general conformance with the design and the requirements of the contract documents. Markings or comments shall not be construed as relieving the Developer/Contractor from compliance with the contract documents.

Submittals may be rejected based on inadequate information and/or not meeting the requirements of the Specifications or Drawings. Rejection of submittals requires action on the part of the Developer to correct the reason for the rejection.

The Developer remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, and for techniques of assembly and installation.

1.15 Determination of "Or Equal"

The Engineer shall be the sole judge of the question of "or equal" of any supplies or materials proposed by the Developer. The Developer shall pay to the District the cost of tests and evaluations by the Engineer to determine acceptability of alternatives proposed by the Developer, in accordance with established rates of the Engineer, for time and expense work.

1.16 Pre-construction Photos

A minimum of one pre-construction photograph shall be taken in each direction at a minimum of 50-foot intervals along the route of the water or sewer main construction within the public right-of-way. In addition, where construction will take place in undeveloped 'raw' land, photographs shall also be provided at 50-foot intervals along the perimeter of the parcel of land to be developed. In areas with extensive improvements, several photographs shall be taken.

A sample of the photos shall be provided to the District for agreement of the photo's general quality and content. The photographs shall be 5" x 7" size, color, glossy finish, and must show the flagged position of the route of the pipeline and adjacent property improvements. Each photograph shall be labeled with identification showing street location, date taken, and viewing direction. Two (2) complete photo albums containing all pre-construction photographs shall be delivered to the District prior to beginning construction. Care should be taken to identify pre-construction damage, surface conditions, and structural problems in the photographs.

In lieu of photographs, the Developer may video record, in DVD format, the entire project alignment in a manner that meets all of the requirements listed above.

If a disagreement about the quality of restoration occurs and the photographs or video do not provide enough evidence to show clearly the area in question prior to construction, it shall be the responsibility of the Developer to restore the area to a condition that is acceptable to all parties at no expense to the District.

1.17 Pre-construction Meeting

After the District has approved the Plans and a Performance Guarantee and a Certificate of Insurance have been provided to the District, the Developer shall contact the District to schedule a pre-construction meeting. The pre-construction meeting will be held at a designated location during normal District office hours. District staff may also determine to continue and/or complete the pre-construction meeting at the project site. The Developer is responsible to insure that pertinent King County representatives, other appropriate government representatives, and/or appropriate utility company representatives are also in attendance. Within 3 days of the completion of the meeting, the Developer shall provide meeting minutes to the participants. The scheduling of construction progress meetings will be addressed at this time.

1.18 Accessibility of Plans and Specifications

The Developer shall insure that at least one complete set of plans is available at the construction site at all times. Where shop drawings are required, one copy of the approved shop drawings shall be kept constantly accessible at the construction site.

1.19 Construction Observation - Compliance With Contract Documents

Observation of the work by the District and its authorized agents shall be strictly for the benefit of the District and nothing contained herein shall be construed to relieve the Developer of his obligations under this application.

The Engineer and his/her representatives shall at all times have access to the work for the purpose of verifying compliance with the contract documents and testing. The Developer shall provide proper and safe facilities for such access and for such observation and testing.

If any work should be covered up without approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for inspection at the Developer's expense.

Re-examination of questioned work may be ordered by the Engineer, and if so ordered, the work shall be uncovered by the Developer at the Developer's expense.

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

For a performance test to be observed by the Engineer, the Developer shall make whatever preliminary tests are necessary to assure that the material and/or equipment are in accordance with the specifications. If, for any reason, the test observed by the Engineer is unsatisfactory, the Developer shall pay all costs incurred by the Engineer for the inspection and supervision of all further testing.

Where work is performed other than during the normal 40-hour week, the Developer shall pay all costs of observation by District Representatives.

Where the specifications, the Engineer's instructions, laws, ordinances, or any government authority require any work to be specially tested or inspected, the Developer shall give the Engineer timely notice that such test or completed work is ready for inspection. If the inspection is by another authority other than the Engineer, the Developer shall give the Engineer timely notice of date fixed for such inspection. The Developer shall secure required certificates of inspection by authority other than the Engineer.

1.20 Restoration of Improvements

Whenever it is necessary in the course of construction to remove or disturb culverts, driveways, roadways, exposed or buried utilities, monuments, property stakes, sidewalks, fences, mailboxes, landscaping, street signs, or other existing improvements, without limiting the generality thereof, whether on private or public property, they shall be replaced to a condition equal to or better than what existed prior to construction.

1.21 As-built Requirements

The Contractor shall maintain a set of project plans on the job site marked to indicate District-approved plan revisions and other details of construction made in the field. Upon completion of the project, the Developer shall deliver the hand marked set, one electronic copy of surveyed "as-built" drawings" in AutoCAD version 2004-compatible format and an associated set of "as-built" mylars. All documents shall be stamped or labeled as "as-built", and be provided with the professional stamp of the licensed engineer or land surveyor responsible for the accuracy of the as-built drawings. The District shall have an opportunity to review the "as-built" drawings for completeness. Any revisions required by the District shall be addressed prior to final District acceptance of the project. The Developer shall be responsible for any costs required to "as-built" the construction drawings. The project plans shall become the property of the District.

1.22 Warranty

The water and/or sewer line extension shall be warranted against defects for a period of two (2) years beginning at the time the District accepts the work as complete. In that time period, the Developer shall be required to repair any discrepancies in the system that occur under ordinary operation of the facility. The maintenance bond form to be used for this warranty is included in **Appendix D** of this Manual. Three (3) months prior to the end of the warranty period, the District will perform an inspection of the facilities to determine if any discrepancies exist. In the case of gravity sanitary sewer, the Developer may be required to do a video inspection of the pipelines, at the Developer's expense, if the District determines there is cause. The new video inspection will be compared with the video inspection performed at the completion of construction to determine if any discrepancies exist. If any areas of the pipe look as though they have deflected or deformed, the District may allow the Contractor to mandrel the questionable section of pipe. If it is determined that repairs are needed, the Developer will be responsible to complete the repairs at his/her expense before the District will release the Maintenance Bond. The video inspection, mandreling, and correction of any defects will be completed at the Developer's expense.

WATER SYSTEMS DESIGN STANDARDS

2 General Requirements – Water

Any extension of the District water system shall be completed in accordance with the terms of a Developer Extension Agreement.

All extensions must conform to Washington State Department of Health (DOH), Skyway Water & Sewer District, WAC 246-290-200, Endangered Species Act BMP's, and other local authority requirements. In planning for any development, it shall be the Developer's responsibility to ensure adequate water can be obtained to satisfy all domestic and fire flow requirements. The Developer shall coordinate with the District and the local fire authority. Extensions to the District Water system shall conform to the District's Comprehensive Water Plan.

Anyone wishing to connect to and extend the District's water system must contact the District and provide a written request for water availability. The written request shall include a complete legal description of the parcel, a description of the proposed use of the parcel, and legal ownership. For applicants other than single-family residential, the Developer shall provide projected demand requirements. Upon review of the request, the District will provide a listing of conditions and connection charges to connect to and extend the District's water system.

The Developer/Contractor shall comply with all of the requirements for back flow protection and cross connection control to protect the District's water system. Engineered backflow plans shall be submitted to the District for review.

The DOH mandates that water mains must be sized to deliver peak hourly demand at a minimum of 30 psi pressure, and where fire flow is provided, maximum day demand plus fire flow at a minimum of 20 psi.

Additionally, construction completion reports shall be prepared by the Developer's engineer and kept on file by the District in accordance with WAC 246-290-125(2) and WAC 246-290-120(5).

2.1 Developer Extension Checklist – Water

As part of the development process, the Developer must complete the checklist for extension of the District's water system. A copy of the checklist is included in **Appendix F** of this Manual. The checklist contains items that must be completed throughout the developer extension process. The Developer is required to keep this checklist up to date and must turn in the completed checklist to the District prior to acceptance of construction by the District.

2.2 General Water Notes

General Notes and Water Notes shall be included on the engineered plans for water main extensions. These notes can be found in **Appendix I** of this Manual.

2.3 Mainline Design

Water mains shall be sized to provide adequate domestic flow, plus the required fire flow at 20 psi residual pressure anywhere in the system. The King County Fire Marshall will determine fire flow requirements.

The minimum water main size shall be 8 inches in diameter as long as fire flow requirements can be met. Nothing shall preclude the District from requiring the installation of a larger sized main than required for the specific project if the District determines a larger size is needed to meet fire protection requirements or for future service.

The layout of extensions shall provide for the future continuation of the existing system as determined by the District. In addition, main extensions shall be extended to and through the side of the affected property fronting the main unless it is a dead-end main.

The minimum cover for all water mains from top of pipe to finish grade shall be 36 inches unless otherwise approved. If the pipe is offset to the edge of the road, the actual roadway cross grade shall be projected out and used to measure cover to top of pipe. This will require more fill over the pipe in a fill section but allows the pipe adequate cover in the event of future roadway cuts or widening. If the pipe is located under a ditch or on the "downhill" slope of the roadway cross-section, the minimum cover over the pipe shall be 36 inches regardless of projected grades.

All proposed fittings shall be rated at 250 psi minimum working pressure.

2.3.1 Water Line – Sanitary Sewer Crossings

The following section is an excerpt from the State of Washington Department of Ecology's (DOE) "Criteria for Sewage Works Design", current edition. The entire document can be accessed on the Internet at http://www.ecy.wa.gov/pubs/9837.pdf.

Special Requirements (DOE section C1-9)

Required Separation Between Water Lines and Sanitary Sewers (DOE section C1-9.1)

The basic separation requirements apply to all gravity and pressure sewers of 24-inch diameter or less; larger sewers may create special hazards because of flow volumes and joint types, and accordingly require additional separation requirements. The special construction requirements given are for the normal conditions found with sewage and water systems. More stringent requirements may also be necessary in areas of high ground water, unstable soil conditions, and so on. Any site conditions not conforming to conditions described in this section will require assessment and approval of the appropriate state and local agencies.

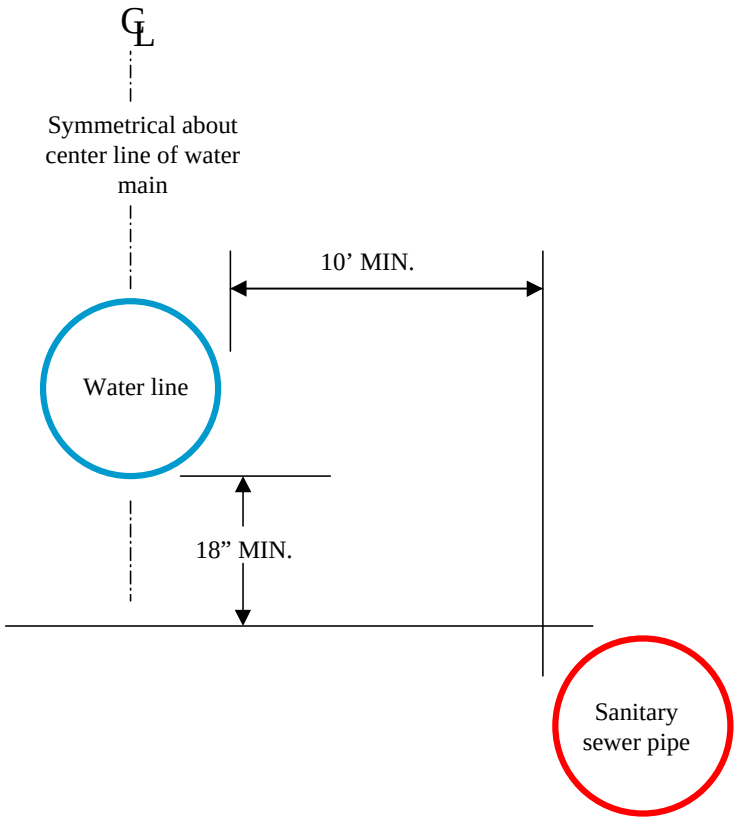
Horizontal and Vertical Separation (Parallel) (DOE section C1-9.1.1)

A minimum horizontal separation of 10 feet between sanitary sewers and any existing potable water lines, and a minimum vertical separation of 18 inches between the bottom of the water line and the crown of the sewer, shall be maintained. The distance shall be measured edge to edge. See Figure C1-2.

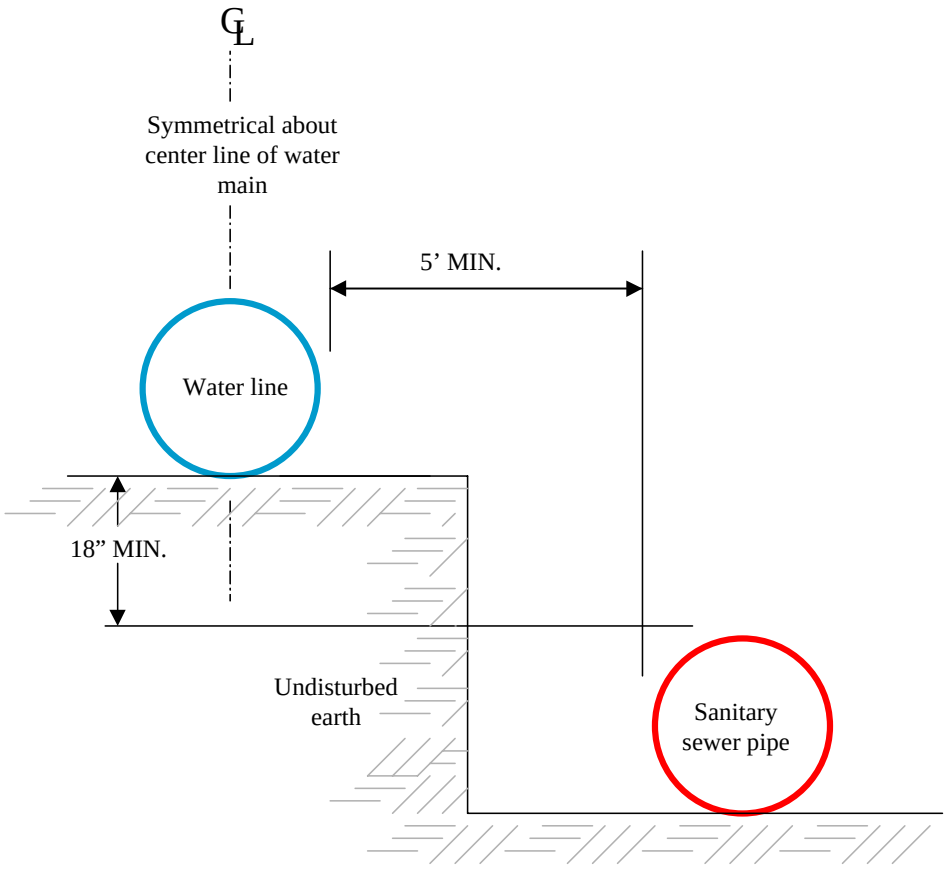
Unusual Conditions (Parallel) (DOE section C1-9.1.2)

When local conditions prevent the separations described above, a sewer may be laid closer than 10 feet horizontally or 18 inches vertically to a water line, provided:

- It is laid in a separate trench from the water line.
- The elevation of the crown of the sewer line must be at least 18 inches below the bottom of the water line. When this vertical separation cannot be obtained, the sewer shall be constructed of materials and joints that are equivalent to water main standards of construction and shall be pressure tested to ensure watertightness prior to backfilling. Adequate restraint should be provided to allow testing to occur.
- If sewers must be located in the same trench as a potable water line, special construction and mitigation is required. Both water lines and sewer lines shall be constructed with a casing pipe of pressure-rated pipe material designed to withstand a minimum static pressure of 150 psi. The water line shall be placed on a bench of undisturbed earth with the bottom of the water pipe at least 18 inches above the crown of the sewer, and shall have at least 5 feet of horizontal separation at all times. Additional mitigation efforts, such as impermeable barriers, may be required by the appropriate state and local agencies. See Figure C1-3.



Required Separation Between Water Lines and Sanitary Sewers, Parallel Construction (DOE Figure C1-2)



Required Separation Between Water Lines and Sanitary Sewers, Unusual Conditions Parallel Construction (DOE Figure C1-3)

Vertical Separation (Perpendicular) (DOE section C1-9.1.3)

Sewer lines crossing water lines shall be laid below the water lines to provide a separation of at least 18 inches between the invert of the water line and the crown of the sewer.

Unusual Conditions (Perpendicular) (DOE section C1-9.1.4)

When local conditions prevent a vertical separation as described above, construction shall be used as follows:

A. Gravity Sewers Passing Over or Under Water Lines

These gravity sewers shall be:

- Constructed of material described in Table C1-4. The one segment of the maximum standard length of pipe (but not less than 18 feet long) shall be used with the pipes centered to maximize joint separation.

- Standard gravity-sewer material encased in concrete or in a one-quarter-inch thick continuous steel, ductile iron, or pressure rated PVC pipe with a dimension ratio (DR) (the ratio of the outside diameter to the pipe wall thickness) of 18 or less, with all voids pressure-grouted with sand-cement grout or bentonite. Commercially available pipe skids and end seals are acceptable. When using steel or ductile iron casing, design consideration for corrosion protection should be considered.

- The length of sewer pipe shall be centered at the point of crossing so that the joints will be equidistant and as far as possible from the water line. The sewer pipe shall be the longest standard length available from the manufacturer.

Water Main Standard Pipe Material (DOE Table C1-4)

	AWWA (ASTM) Standard		
Type of Pipe	**Pipe**	**Joint**	**Fittings**
Ductile Iron	C 151 and C 104	C 111	C 110

Note: the rest of the table is not included because the District only allows ductile iron pipe

B. Water Lines Passing Under Gravity Sewers

Water lines shall be protected by providing:

- A vertical separation of at least 18 inches between the invert of the sewer and the crown of the water line.

- Adequate structural support for the sewers to prevent excessive deflection of joints and settling on and breaking of the water lines.

- The length of sewer pipe shall be centered at the point of crossing so that the joints will be equidistant and as far as possible from the water line. The sewer pipe shall be the longest standard length available from the manufacturer.

- A water line casing equivalent to that specified in C1-9.1.4A.

C. Pressure Sewers Under Water Lines

These pressure sewers shall only be constructed under water lines with ductile iron pipe or standard sewer pipe in a casing equivalent to that specified above in C1-9.1.4A for a distance of at least 10 feet on each side of the crossing.

2.3.2 Trench Excavation/Backfill

Trenches shall be excavated to the line and depth designated on the approved plans to provide a minimum of 36" cover over the pipe, unless otherwise shown on the Contract Drawings. The trench shall be kept free from water until jointing is complete. Surface water shall be diverted so as not to enter the trench. The Contractor shall maintain sufficient pumping equipment on the job to insure that these provisions are carried out. 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.

Trenching operations shall not proceed more than 300 feet in advance of pipe laying, except with written consent of the Engineer. The Developer and their Contractor shall comply with all applicable OSHA and WISHA safety requirements.

Where governmental agencies, other than the owner, 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.

2.3.3 Pipe

All pipe for water mains shall have rubber gasket joints, push-on type, or mechanical type meeting the requirements of AWWA C111 and shall comply with the following type:

Ductile Iron Pipe: Ductile iron pipe shall conform to AWWA C151 Class 52 minimum thickness and have a cement mortar lining conforming to AWWA C104. Where restrained joints are not required, all pipes shall be joined using non-restrained joints, which shall be rubber gaskets, push-on type or mechanical joint, conforming to AWWA C111.

2.3.4 Fittings

All fittings shall be ductile iron compact fittings conforming to AWWA C153 or AWWA C110. Joints shall meet the requirements of AWWA C111. All shall be cement mortar lined conforming to AWWA C104. Plain end fittings shall be ductile iron if mechanical joint retainer glands are installed on the plain ends. All fittings shall be connected by flanges or mechanical joints.

2.3.5 Restrained Joints

Where the restraining of ductile iron pipe joints, fittings, and valves is required by the District, it shall be accomplished by the use of Field-Lok gaskets and MegaLug restrained joints, or approved equal.

2.3.6 Valves, Valve Boxes, and Marker Posts

All valves and fittings shall be ductile iron with ANSI flanges or mechanical joint ends. Only District employees shall operate all existing valves.

Valves shall be installed in the distribution system at sufficient intervals to facilitate system repair and maintenance, but in no case shall there be less than one valve every 900 feet. There shall be three valves on each tee and four valves on each cross. Specific requirements for valve spacing will be made at the plan review stage.

Gate Valves, 3 inch to 16 inch: The design, materials and workmanship of all gate valves shall conform to AWWA C515 latest revision. Gates valves shall be resilient wedge non-rising stem (NRS) with two internal O-ring stem seals and all ductile iron bodies. Gate valves shall be Mueller, M & H, or American Flow Control Series 2500.

Gate valves shall be used on all 3 to 16 inch lines.

Butterfly Valves: For 18" and larger pipe, butterfly valves shall be used. Butterfly valves shall conform to AWWA C504, Class 150B, with cast iron short body and O-ring stem seals. Butterfly valves shall be Mueller, Linseal III, Pratt Ground Hog, or Allis Chalmers.

Butterfly valves shall be used on all lines 18 inches and larger except when a tapping valve is required.

Valve Box: All valves shall be cast iron with lid marked "Water". Valve boxes shall be Rich Manufacturing, Series 940, or equal with "Seattle" lug-type cover. A Series 940 or equal locking cover shall be installed in high traffic areas or when designated by the District. Each box shall be adjusted to match the finish grade at the valve location. All valve box covers shall be painted as designated by the District.

Extension pieces (when used) shall conform to minimum thickness requirements and shall fit into the top section and over the bottom section.

If valves are not set in paved areas, a 3-foot by 3-foot by 4-inch asphalt-concrete pad shall be set around each valve box a finished grade.

Valve Marker Post: Valve marker posts shall be 4-inch x 4-inch reinforced concrete posts 5 feet long stamped with "W" and distance to valve. Post shall be painted with 1 prime coat and 2 coats yellow #3472 as manufactured by Farwest Paint Mfg. Co. or safety yellow #1063 by Parker Paint Co. or approved equal.

Valve marker posts shall be required where the valve is located outside the paved area.

2.3.7 Fire Hydrants

Fire hydrants shall conform to AWWA Standard Specification C502.73 and be Mueller Centurion or Waterous Pacer with ductile iron body. They shall be a rising stem compression-type that opens counterclockwise, and closes with the pressure. The minimum main valve opening diameter shall be 5 ¼" unless otherwise specified. The hydrant seat and its retaining ring shall be bronze. All external bolts, nuts and studs shall be cadmium plated in accordance with ASTM A165 Type HS or rust proofed by some other process approved by the District. Gaskets shall be of rubber composition.

Fire hydrants shall be equipped with one 4 ½" steamer connection (National Standard Thread) with 4" Storz Adapter style S-37 W/ SC cap and two 2 ½" NST hose ports. Pentagon nuts or caps and operating stem shall measure 1 ¼" point to flat and shall open by turning to the left. Nozzle shall be fitted with renewable bronze nipples locked in place.

Fire hydrants shall be installed in accordance with Standard Detail WA05.

2.3.8 Air and Vacuum Release Valves

Air and vacuum release valves for potable water systems shall be APCO 145C combination air release valves or approved equal. Installation shall be as shown on Standard Detail WA06.

The installation shall be set at the high point of the line when required by the District. Where possible, pipes are to be graded to prevent the need for an air release valve.

2.3.9 Blow-Off Assembly

If a fire hydrant is not located at the end of a dead end main, a blow-off assembly shall be required. On water mains that will be extended in the future, the valve that operates the blow-off assembly shall be the same size as the main and provided with a concrete thrust block. Blow-offs shall also be located at the low point of water mains where required. The working pressure rating for blow-off assemblies shall be 250 psi. Blow-off assemblies shall be located near the center of cul-de-sacs when appropriate. Installation shall be as shown on Standard Details WA07 and WA08.

2.3.10 Backflow Prevention

The installation of backflow devices is required to protect the District's water system and users from possible contamination.

All water system connections to serve buildings or properties with domestic potable water, fire sprinkler systems, or irrigation systems shall comply with the minimum backflow requirements as established by the Department of Health (DOH), the AWWA Standards and the District.

All backflow assemblies must be installed in a manner that will facilitate their proper operation, in-line testing, and maintenance. They must also be installed in compliance with safety regulations, and all applicable building and plumbing code regulations. Each assembly must be on the Department of Health's (DOH) "approved list".

When installation is complete, the District will inspect installation following satisfactory testing of the device by a state certified backflow assembly tester (BAT). The District shall get the certificate for testing of any backflow prevention device before releasing the certificate of occupancy on any building.

All required backflow prevention devices shall be subject to the District's cross-connection control program. All cross connection control enforcement shall comply with the District's adopted resolution in conjunction with the latest edition of the "Yellow Manual". Periodic

certification of the cross-connection control devices is required. Devices that are out of compliance will result in the District's turning off of the water service.

2.3.11 Tracer Tape

Tracer tape shall be installed for all non-metallic pressure pipe mains and service 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.

2.3.12 Tracer Wire

Tracer wire shall be required if, under certain circumstances, non-metallic pipe is allowed for use by the District. See section 3.3.11 of this Manual for tracer wire requirements.

2.3.13 Thrust Blocking

Location of thrust blocking shall be shown on the plans. Thrust blocks shall comply with Standard Details WA21, WA22, and WA23.

2.3.14 Connect to Existing System

The Developer shall be responsible for determining the scope of work for connection to existing water mains.

It shall be the Contractor's responsibility to field verify the type of pipe and fittings, locations, and depth of the existing main to determine the fittings required to make the connections to the existing mains. All taps shall be scheduled with the District.

The Contractor shall give the District a minimum of 3 working days notice of any planned connection to an existing pipeline. This includes all cut-ins and live taps. Notice is required so any disruptions to existing services can be scheduled. The Developer/Contractor shall notify customers involved or affected by the water service interruption. The Contractor shall make every effort to schedule water main construction with a minimum interruption of water service. In certain situations, the District may dictate scheduling of water main shutdowns so as not to impose unnecessary shutdowns during specific periods to existing customers.

No water connections shall be made until the new piping has been flushed, disinfected, and successfully pressure and bacteria tested. A District representative shall be present at the time of the connection.

2.4 Water Service Connections

A minimum of one water service connection shall be provided for each dwelling unit (building) for single-family development or redevelopment. Multiple family duplex (two units), and commercial development or redevelopment shall be provided with one water service connection for each individual dwelling and/or business unit. No joint water services for these conditions will be allowed.

Multiple family buildings (rentals) containing more than two units may be allowed the provision of one water service stub and associated master meter to the entire building. Master meters will not be allowed for service to more than one per building. Deviations to this may be granted by the District on a case-by-case basis. An approved backflow prevention assembly must be installed in conjunction with any master meter.

Each privately owned individual multifamily unit (condominium) within a multiple family building shall be required to have their own water meter.

Water services, that portion of a water service line extended from the District water meter to a point where it connects to the building plumbing, shall be owned and maintained by the Developer/property owner. Water services shall be installed per the Uniform Plumbing Code.

2.4.1 Water Service Stubs

A water service stub is that portion of a water line that provides service to a property, and is constructed between a water main and a right-of-way line, property line, or easement line. Water service stubs shall be installed according to Standard Details WA02, WA03, and WA04. In no case may the specified water service stub be modified without the approval of the District and/or Engineer.

Water service stubs shall be owned and maintained by the District following the District's acceptance of the project.

Existing building water service stubs may be used in connection with new buildings or buildings with expanded facilities/footprints only when they are found, on examination and tests by the District, to meet the requirements for new construction (i.e. material type, diameter, overall condition, etc.). The Developer shall replace those water service stubs not meeting the requirements for new construction.

For developer extension projects, the Developer shall install all service connections following the successful pressure testing of the water main. The Developer shall furnish and install everything including the meter, meter box, service pipe, and all fittings, once the District has approved material submittals. Water meters will be set only after the system has been successfully tested and project acceptance is granted by the District's Board of Commissioners.

For a new service connection to an existing water main, an application must be made to the District. The water service connection may be made upon the District's approval of the application and property owner/Developer's payment of all applicable fees. The Developer shall tap the water main, and install service stubs for water service taps.

When connection to the public water system is desired by a customer connected to an existing domestic well, a physical disconnect from the well must be made. This is necessary to assure that an unapproved auxiliary water supply (the customer's well) will not contaminate the District's water supply. The customer's domestic well may be kept serviceable for irrigation purposes. No water meter will be installed until a cross connection inspection has been completed to the satisfaction of the District.

2.4.2 Water Service Stub Construction Requirements

Water service stub lines shall be as specified herein. No glued joints will be accepted. Service lines shall be installed 90 degrees off the main.

Service saddles shall be double strap or stainless steel band type and shall be as shown on the details or approved equal. All clamps shall have rubber gasket CC fitted outlets.

¾" through 2 ½" diameter service lines shall be type K copper. Schedule 40 brass may be used for 1 ½" through 2 ½" service piping.

Corporation stops shall be as shown on the appropriate detail or approved equal with CC fittings conforming to AWWA C800.

2.4.3 Water Meters

Water meters shall be Precision Model PMM for sizes 5/8" / 3/4" to 2". Water meters for size 2-1/2" and larger shall be compound meters per the Skyway Water & Sewer District's specifications. Meters shall read in cubic feet. The Developer shall confirm acceptability of the specified meter models prior to ordering, as model and/or type of required water meter is subject to change.

For 1-1/2" meters and larger, a minimum of six (6) unobstructed straight pipe diameters shall be provide upstream of the water meter. If space does not allow for a minimum of six diameters, straightening vanes in the pipe ahead of the meter are required. At least one (1) straight pipe diameter without obstruction is required downstream of the meter.

2.5 Hydrostatic Testing

Prior to the acceptance of the work, the installation shall be subjected to a hydrostatic pressure test of 150 psi in excess of the system's normal operating pressure, but in no case shall be less than 225 psi. Pressure testing shall be per WSDOT Standard Specification 7-09.3(23). The Contractor shall remedy any leaks or imperfections developing under said pressure. The duration of the test shall be 15 minutes. No main shall be hydrostatically tested until the lines are flushed of chlorine. The main shall be tested between valves. Insofar as possible, no hydrostatic pressure shall be placed against the opposite side of the valve being tested. Test pressure shall be maintained while the entire installation is inspected.

The Contractor shall provide all necessary equipment and shall perform all work connected with the tests. Tests shall be made after all mainline pipe, with the exception of the segment of pipe that will connect to the existing system, has been installed and the roadway section has been

constructed to subgrade. Service connections shall not be made until mainline is tested and approved. The Contractor shall provide the District certification that the gauge used for pressure testing is calibrated and accurate. The Contractor shall perform the test to assure that the equipment to be used for the test is adequate and in good operating condition and the air in the line has been released before requesting the District to witness the test. The Contractor shall not connect to existing piping until all testing of the new construction has been satisfactorily completed.

A Contractor that maliciously tampers with testing equipment, modifies testing methods, or in any way tampers with the testing procedures approved by the District is violating District policy. Committing such acts will prohibit the construction company owner and project Superintendent from working on future water or sanitary sewer facilities in the District in perpetuity. This applies to testing of both water and sanitary sewer facilities.

2.6 Sterilization and Flushing

Sterilization of water mains shall be accomplished with a minimum 50 mg/l chlorination by the Contractor in accordance with the requirements of the Washington State Department of Health and in a manner satisfactory to the District. The Contractor/Developer shall use Best Management Practices (BMP's) while conforming to the requirements of this Manual, the most recent version of WSDOT's ESA BMP's Guidelines, the State's and County's ESA requirements/guidelines for the safe neutralization of chlorine and pH, and disposal of flushing water. The chlorine concentration shall be zero and the pH shall be within acceptable limits of neutral. At no time shall chlorinated water from a new main be flushed into a fresh water body or its tributary area. This is to include lakes, rivers, streams, drainage ways, storm drainage systems, and any and all other areas tributary to where fish or other natural water life can be expected.

Once a chlorine concentration has been established throughout the line, the line shall be left undisturbed for 24 hours minimum and 72 hours maximum (allowed only over weekends). The line shall then be thoroughly flushed and water samples will be taken and delivered to a local health agency by the District for analysis within 24 hours after flushing and disinfecting. Should the initial treatment result in an unsatisfactory bacteriological test, additional flushing and the original chlorination procedure shall be repeated by the Contractor until satisfactory results are obtained. The water sample can only be drawn and delivered to the local health agency on Mondays, Tuesdays, and Wednesdays until noon.

SANITARY SEWER SYSTEMS DESIGN STANDARDS

3 General Requirements – Sanitary Sewer

Any extension of the District sewer system shall be completed in accordance with the terms of a Developer Extension Agreement.

All extensions must conform to State of Washington Department of Ecology (DOE), the Skyway Water & Sewer District, the UPC, UBC, WAC 173-240-040(2), Endangered Species Act BMP's, and other local authority requirements. In planning for any development, it shall be the Developer's responsibility to ensure adequate capacity exists in the District's sewer system to accommodate all flows anticipated from the area tributary to the sewer line extension. The Developer shall coordinate with the District to determine the extent of the tributary area based on the District's Comprehensive Sanitary Sewer Plan.

Anyone wishing to connect to and extend 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, flow requirements, and legal ownership. Upon review of the request, the District will provide a listing of conditions and connection charges to connect to and extend the District's sanitary sewer system.

3.1 Developer Extension Checklist – Sanitary Sewer

As part of the development process, the Developer must complete the checklist for extension of the District's sewer system. A copy of the checklist is attached in **Appendix F** of this Manual. The checklist contains items that must be completed throughout the entire developer extension process. The Developer is required to keep this checklist up to date and must turn in the completed checklist to the District prior to acceptance of construction by the District.

3.2 General Sewer Notes

General Notes and Sewer Notes shall be included on the engineered plans for sanitary sewer main extensions. In addition, depending on the type of sewer system proposed by the Developer, the Gravity Sewer Notes and/or the Pressure Sewer Notes shall also be included on the Plans. These notes can be found in **Appendix I** of this Manual.

3.3 Pipeline Design

The layout of extensions shall provide for the future continuation of the existing system as determined by the District. In addition, main extensions shall be extended to and through the side of the affected property fronting the main unless it is a dead-end main.

New sewer systems shall be designed by methods in conjunction with the basis of per capita flow rates. Methods shall include the use of peaking factors for the contributing area, allowances

for future maximum development per current zoning code, and modification of per capita flow rates based on specific data. Documentation of the alternative method used shall be provided along with plans.

The minimum sewer main size shall be 8 inches in diameter, unless certain special circumstances are present. Nothing shall preclude the District from requiring the installation of a larger sized main than required for the specific project if the District determines a larger size is needed to meet future flow requirements as shown on the District Comprehensive Sanitary Sewer Plan. For situations where a 6-inch diameter sewer main is allowed, the District follows the minimum standards set by the DOE, as outlined in the DOE's "Criteria for Sewage Works Design", current edition. (The entire document can be accessed at http://www.ecy.wa.gov/pubs/9837.pdf.) In the special cases where the District's Board of Commissioners accepts 6-inch diameter sewer lines, the 6-inch lines shall meet the following criteria per the DOE Manual Section C1-4.1:

- The probable maximum number of services will not exceed 30 persons. (For this purpose, compute on the basis of not less than three persons per residence.)
- Running lengths of 6-inch (mainline) pipe in excess of 150 feet will be allowed only at the discretion of the District.
- A manhole shall be provided where the 6-inch pipe connects to an 8-inch or larger line. Manholes shall be provided at a maximum of 400-foot intervals and at changes in direction or grade. Cleanouts are not acceptable as substitutes for manholes. This does not include a 6-inch side sewer to serve single-family dwellings.
- A manhole or cleanout shall be provided at the end of the 6-inch line. If a cleanout is provided, the first manhole shall be placed within 150 feet of the end of the line.
- No extension of the 6-inch line shall be possible at a later date.

The minimum cover for all sewer mains from top of pipe to finish grade shall be 72 inches unless otherwise approved. If the pipe is offset to the edge of the road, the actual roadway cross grade shall be projected out and used to measure cover to top of pipe. This will require more fill over the pipe in a fill section but allows the pipe adequate cover in the event of future roadway cuts or widening.

3.3.1 Sanitary Sewer – Water Main Crossings

The Contractor shall maintain a minimum of 18 inches of vertical separation between sanitary sewers and water pipes with the water pipe passing above the sanitary sewer pipe.

The longest standard length of sewer pipe shall be installed so that the joints will fall equidistant from any water crossing. In some cases where minimum separation cannot be maintained, it may be necessary to encase the water pipe and/or sewer service in pipe or concrete. No concrete shall be installed unless specifically directed by the District.

Additional requirements taken from the DOE's "Criteria for Sewage Works Design", current edition, can be found in Section 2.3.1 of this Manual.

3.3.2 Trench Excavation/Backfill

Trenches shall be excavated to the line and depth designated on the approved plans to provide a minimum of 72" cover over the pipe, unless otherwise shown on the Contract Drawings. The trench shall be kept free from water until jointing is complete. Surface water shall be diverted so as not to enter the trench. The Contractor shall maintain sufficient pumping equipment on the job to insure that these provisions are carried out. 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.

Trenching operations shall not proceed more than 300 feet in advance of pipe laying, except with written consent of the Engineer. The Developer and their Contractor shall comply with all applicable OSHA and WISHA safety requirements.

Where governmental agencies, other than the owner, 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.

3.3.3 Pipe and Fittings

All materials shall conform to, and be placed in accordance with the requirements specified in these Standard Specifications and the Standard Details.

Pipes shall be stored in unit packages provided by the manufacturer. The unit packages shall be supported by racks to prevent damage to the underside of the pipe. 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.

Sanitary sewer mainline piping shall be designed and constructed to accommodate each adjoining property by gravity connection. This includes the provision of a gravity sewer connection to each property's current or future basement. A minimum of 72 inches of cover over the pipe shall be provided. Exceptions to these standards may be considered by the District on a case-by-case basis based on the practicality of construction. Sewer mainline piping shall be laid on a minimum slope as specified in the following excerpt from the DOE's "Criteria for Sewage Works Design", current edition.

Slope (Minimum Velocity) (DOE section C1-4.4)

> All sewers shall be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 fps. Self-cleaning velocity shall be provided and demonstrated by the engineer to the public entity to accept the problem caused by a lack of sufficient flow. Table C1-1 lists the minimum slopes that should be provided; however, slopes greater than those listed in this table are desirable under low-flow conditions.

Minimum Slope of Sewers, by Size (Assuming Full Flow) (DOE Table C1-1)

Sewer Size (inches)	Minimum Slope (feet per 100 feet)
8	0.40
10	0.28
12	0.22
14	0.17
15	0.15
16	0.14
18	0.12
21	0.10
24	0.08
27	0.07
30	0.06
36	0.05

Sewers shall be laid with uniform slope between manholes.

Sewers on a 20-percent slope or greater shall be anchored securely with concrete anchors or their equal. Suggested minimum anchorage spacing is as follows:

- Not over 36 feet center-to-center on grades of 20 percent and up to 35 percent.
- Not over 24 feet center-to-center on grades of 35 percent and up to 50 percent.
- Not over 16 feet center-to-center on grades of 50 percent and more.

PVC Pipe and Fittings: 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. There shall be no reduction in pipe wall thickness at the bell as the result of bell formation. All pipe shall be provided with a reference mark for proper spigot insertion. Joint gaskets shall be fabricated from a compound of which the basic polymer shall be a synthetic rubber consisting of styrene, butadiene, polyisoprene, or any combination thereof, and 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. The District and/or Engineer shall approve the class of pipe used. Unless otherwise specified, use 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) 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.

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 pipes and 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.

For individual grinder pump discharge pressure pipes, butt-fuse welded HDPE, rated at a 200 psi minimum, shall be used. Fittings for connection to the existing District system shall be determined on a case-by-case basis.

Tees and Wyes: Typical connections for side sewer stubs shall be 6-inch inside diameter tee fittings fabricated in the manufacturer's plant. No field cut-in tees or wyes will be allowed without the approval of the District.

3.3.4 Manholes

Manholes shall be of the offset type and shall be precast concrete sections with a precast base made from a 3,000 psi (minimum) structural concrete. Joints between precast wall sections shall be confined O-ring or as otherwise specified. They shall be constructed in full compliance with the details shown on Standard Details SS02, SS03, SS04, and/or SS05, and as further specified herein.

Manhole: Manhole sections shall be placed and aligned so as to provide vertical sides and vertical alignment of the ladder steps. The completed manhole shall be rigid, true to dimension, and watertight. Rough, uneven surfaces and void pockets will not be permitted.

The mortar used between the joints in precast sections and laying manhole adjusting rings shall be composed of one part cement to two parts of non-shrink plaster sand. All joints shall be thoroughly wetted and filled with mortar, smoothed both inside and out to insure watertightness.

Manholes shall be core-drilled for all connections.

Manhole Steps: Manhole steps shall be polypropylene per Standard Detail SS08.

Grade Adjustment: Where work is located in the public right-of-way, not less than 4 inches, nor more than 16 inches, shall be provided between the top of the cone or slab and the top of the manhole frame.

Channels: Channels shall be made to conform accurately to the sewer grade, and shall be brought together smoothly with well-rounded junctions, satisfactory to the Engineer. The channels shall be field poured after the inlet and outlet pipes have been laid and firmly grouted into place at the proper elevations. Allowances shall be made for a minimum of one-tenth foot (0.10') drop in elevation across the manhole in the direction of flow. The maximum allowable drop in inlet elevation shall be 1.0 foot. Cut-in manholes shall be exempt from the inlet drop requirement. The bottom of the channel shall be well rounded up to the spring line of the pipe. Channel sides shall be carried up vertically from the spring line of the pipe to the full depth of the various pipes. The concrete shelf shall be warped evenly and sloped 3/8" per foot to drain to the channel. Rough, uneven surfaces will not be permitted. Channels shall be constructed to allow the installation and use of a mechanical plug of the appropriate size.

Pipe connections: All rigid pipe entering or leaving the manhole shall be provided with flexible joints within twelve inches (12") of the manhole structure, and shall be placed on firmly compacted bedding. Special care shall be taken to ensure that the openings through which pipes enter the structure are completely and firmly filled with non-shrink mortar from both the outside and inside to insure watertightness. All non-rigid pipe connections to manholes shall be made with gasketed adapters as approved by the District.

Vacuum Testing: Vacuum testing per Section 3.3.5 of this Manual shall be performed for each sanitary sewer manhole installed.

Drop Manholes: Drop manholes shall, in all respects, be constructed as a standard manhole with the exception of the outside drop connection, which shall be constructed as shown on Standard Detail SS06. Inside drops shall not be allowed.

Lift Holes and Steel Loops: All lift holes shall be completely filled with expanding mortar, smoothed both inside and out, to insure watertightness. All steel loops must be removed, flush with the manhole wall. The stubs shall be covered with mortar and smoothed. Rough, uneven surfaces will not be permitted.

Manholes at Terminus of Force Mains: At a minimum, the manhole at the terminus and the first manhole downstream of the terminus 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.

See Section 3.5.6 of this Manual for further force main termination manhole requirements.

3.3.5 Manhole Vacuum Testing

All manholes shall be cleaned and tested prior to backfilling. Vacuum testing shall be according to ASTM C1244, except as specified otherwise herein.

Manholes shall be tested after installation, prior to backfilling, with all connections in place. Lift holes shall be plugged with an approved non-shrink grout prior to testing.

The Contractor shall take precautions during vacuum testing to ensure the protection of all pipe and manhole gaskets and seals. Manhole vacuum testing shall include but not be limited to the following safeguards:

- Manhole boot clamps shall be properly tightened to prevent the boot from being sucked into the manhole.
- Temporarily plug all pipes entering the manhole. Plugs shall be braced to prevent the plug or pipe from being drawn into the manhole.
- Ensure that the vacuum test bladder is equipped with cross bracing against the manhole, across the manhole opening.

Testing Criteria

A vacuum of ten inches of mercury (10" Hg) shall be drawn on the manhole.

The manhole shall be considered to pass the vacuum test if the vacuum does not drop more than 1" Hg (from 10" Hg to 9" Hg) during the following prescribed test times:

Required Test Time for Various Manhole Diameters

MH Depth (feet)	48-Inch Diameter	60-Inch Diameter	72-Inch Diameter
Up to 4 feet	10 seconds	13 seconds	16 seconds
8 feet	20 seconds	26 seconds	33 seconds
12 feet	30 seconds	39 seconds	49 seconds
16 feet	40 seconds	52 seconds	65 seconds
20 feet	50 seconds	65 seconds	81 seconds
24 feet	60 seconds	78 seconds	97 seconds
28 feet	70 seconds	91 seconds	113 seconds

- Round the depth up to the next increment (example: 12.3 feet rounds to 16 feet)

If a manhole fails the vacuum test, the manhole shall be repaired or replaced. Joint gasket repairs require, at a minimum, for the manhole to be disassembled and the joint gasket to be replaced with a new gasket. Grouting repairs shall be made with a non-shrink grout or other material and method acceptable by the District and shall be done on both the outside and inside of the manhole. District-approved exterior sealant coatings may be applied for repair. Interior coatings intended for manhole repair shall be only those specified for use by the District for application to force main discharge manholes. Interior coatings shall only be applied in conjunction with the application of an approved exterior sealant coating. The manhole surfaces shall be properly prepared prior to any repairs. Once the repair material has cured according to the manufacturer's

recommendations, the vacuum test shall be repeated. This process shall continue until a satisfactory test is obtained.

The Developer shall submit proposed manhole repair materials and procedures with their material submittals prior to ordering said materials and prior to the beginning of construction.

The Contractor shall maintain the excavation in a safe manner, keeping the exterior of the manhole free from backfill material while the manhole repair is in progress. Maintaining a safe excavation may include, but not be limited to providing safe access to worker(s) to and from the top of the manhole, and a safe work area both inside and outside of the manhole for workers participating in the manhole testing and repair work. Maintaining the excavation shall also include safely covering excavations at times that the Contactor is not present, such as at night. Unattended excavations shall also be open to vehicular traffic.

Backfilling of the manhole will be allowed following successful vacuum testing of the manhole.

Manholes damaged or disturbed by actions of the Contractor prior to the completion of the two-year warranty period shall be re-tested. If the re-test fails, the Developer shall repair or replace the manhole, and successfully complete a vacuum test.

The Developer shall be responsible for labor, equipment, and other related expenses incurred for rectifying or replacing manholes that fail the vacuum test.

3.3.6 Manhole Frames and Covers

Manhole frames shall be ductile iron. Manhole covers shall be locking-type and made of ductile iron conforming to Standard Detail SS07 and per WSDOT Standard Specification 9-05.15(1). Castings shall be free of porosity, shrink cavities, cold shuts or cracks, or any surface defects, which would impair serviceability. Repair of defects by welding or by the use of smooth-on or similar material will not be permitted. Frames and covers shall be machine-finished or ground on seating surfaces so as to assure a non-rocking fit in any position, and interchangeability of covers. Rings and covers shall be adjusted to conform to the final finished grade surface of the street to the satisfaction of the District and/or governing jurisdiction.

3.3.7 Cleanouts

Cleanouts shall be locking lid type, Olympic Frame No. M1035 D/T, to be installed as shown on the Standard Detail SS12. Cleanout tees shall be double sweep.

3.3.8 Wastewater Access Chamber (WAC)

Wastewater Access Chambers, where allowed by the District, shall be provided and installed per Standard Detail SS14.

3.3.9 Sewer Service Stubs

A side sewer service stub is that portion of a sewer line that provides service to a property, and is constructed between a sewer main and a right-of-way line, property line, or easement line. Sewer service stubs shall be installed according to Standard Detail SS11. In no case may the specified sewer service stub be modified without the approval of the District and/or Engineer.

Sewer service stubs shall be owned and maintained by the Developer/property owner.

All specifications given herein for sewer construction shall also be held to apply to sewer service stubs. Six-inch side sewer stubs shall be installed at a 2% minimum slope. No joint sewer service stub connections are allowed without District Board of Commissioners' approval.

Where there are no basements or other below grade connections, the minimum sewer service stub depth shall be five (5) feet below the existing ground at the property line, except where the property owner may require additional depth. A plastic sewer service stub marker shall extend from the invert of the 6-inch outlet to a point 18 inches (minimum) and 2 feet (maximum) above grade. The marker shall be white in color, non-biodegradable, metal core or backing and have the word sewer painted on it in black letters facing the street or sewer main line, as the case may be. The elevations of the side sewer connections shall be of sufficient depth to serve all existing and possible future basements.

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 and/or Engineer.

The maximum bend permissible at any one fitting shall not exceed a 45-degree bend. The maximum bend of any combination of two adjacent fittings shall not exceed 90 degrees unless a cleanout, and/or straight pipe of not less than three (3) feet in length is installed between such adjacent fittings, or unless one of such fittings is a wye branch with a cleanout provided on the straight leg. The maximum length of 6-inch sewer line shall be 100 feet, unless approved otherwise by the District and/or Engineer.

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, on examination and tests by the District, to meet the requirements for new construction (i.e. material type, diameter, slope, overall condition, etc.). The Developer shall replace those side sewer and sewer service stubs not meeting the requirements for new construction.

3.3.10 Tracer Tape

Tracer tape is required to be installed for side sewer pipe. Under certain circumstances, the District may require tracer tape for non-metallic pressure pipe sewer mains and pressure services. See section 2.3.11 of this Manual for tracer tape requirements.

3.3.11 Tracer Wire

Tracer wire shall be installed for all non-metallic pressure pipe mains and 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 Developer's expense.

Tracer wire shall be brought to final grade within all below-grade boxes, vaults, etc., in a manner approved by the District. Tracer Wire location boxes shall consist of the District's standard valve box per Standard Detail WA09. 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 ¾" pipe saddle to the pipe (facing vertical). The saddle shall NOT be tapped, and shall have all rubber gaskets removed.
- A vertical length of ¾" 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).
- 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 2" of the ground surface.

3.3.12 Connect to Existing System

At connection to existing system, all new sewer connections shall be physically plugged until all tests have been completed and the District approves the removal of the plug upon the Board of Commissioners acceptance of the project by resolution.

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

Connection of a sewer main to an existing mainline system where a manhole is not available shall be accomplished by use of a cut-in manhole per Standard Detail SS05. The existing pipe shall not be cut into until approval is received from the District.

Connections to manholes requiring a drop shall follow the criteria as outlined in Section 3.3.4 of this Manual.

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. 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 Developer's expense, after tapping and prior to approval to ensure compliance. Taps shall be via Insert-A-Tee Saddle for concrete pipe and either Insert-A-Tee or Romac style CB saddle for PVC pipe. 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.

3.3.13 Decommission 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:

- Pump the facility dry by a company licensed in the State of Washington to do so.
- 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.
- The tank shall be filled with non-compressible, non-biodegradable material.

3.4 Pump Stations

All lift stations will be designed to serve the appropriate basin as determined by the District. The District Pump station design shall include duplex pumps at a minimum, each sized for the entire design flow.

Some lift station applications will be required to be customized depending on the size of service area, flow rates and tendencies to the station, and the pumping requirements of the station.

3.4.1 Design Standards

The design of any lift station shall conform to District Standards, DOE's "Criteria of Sewage Works Design", current edition, and application standards as set forth herein. Lift stations shall be of a submersible style unless otherwise specified. If for specific reasons a submersible style lift station is not appropriate, a wet well/dry well or other type of District-approved station may be considered. The plans shall include the following:

1. An overall site drawing of the lift station showing the location of all components including elevations.
2. Design Calculations for pumps, force main, and wet well.
3. A list of specific materials and components used including quantity, description, manufacturer, and area representative.
4. A schematic and line diagram of the service, motor control center, and lift station. Terminology and abbreviations shall be industry standards. A legend shall be provided on all schematics and line diagrams. Upon completion, five (5) copies are required to be submitted to the District.
5. The electrical shall be designed to meet NEC, Washington State, and District Standards.
6. Pumps shall be manufactured by Flygt. No exceptions considered.
7. Pump motors shall have sealed bearings requiring no lubrication.

8. The telemetry for the pump station shall be connected to the District's monitoring facility.

9. The schematic and line diagrams shall show the following telemetry points, if applicable, and a common termination point shall be provided in a lift station to interface between the lift station and the Remote Telemetry Unit (RTU). The telemetry points shall consist of the following:

    - Redundant High Wet Well (float) – alarm and operate
    - High Wet Well
    - Low Wet Well
    - Redundant Low Wet Well (float) – alarm and operate
    - Pump run for each pump
    - Power Fail
    - Pump Fail for each pump
    - Intrusion
    - Spare

10. An automatic pump alternator system shall be installed with the ability to monitor pump run times for each pump at the station.

11. A five-digit hour meter to 1/10 hour increments is required for each pump so that run time can be accounted for.

12. Amp meter for each pump motor.

13. A manual toggle switch to allow selection of lead and lag pump is required.

14. The Developer shall supply a complete operation and maintenance (O&M) manual. Two copies shall be submitted for the initial review. Upon completion, five (5) copies are required to be submitted to the District. Specific components and model numbers shall be highlighted in each manual.

15. An above-grade, pedestal-mounted electrical panel and associated security lighting shall be installed.

16. Decorative PVC-coated, security fence shall surround the pump station site. Fence color shall be black, brown, or green as specified by the District. The Developer shall also provide a padlock keyed to the Standard District lock.

17. Flygt Flush Valve Model 4901 shall be installed on each pump.

18. An in-line gate valve for force main/pump station isolation shall be installed in the force main outside the wet well after the manifold.

19. A gate valve shall be installed on the inlet line into the wet well.

20. Plug valves shall be installed immediately downstream of each of the pump station's check valves, on the inlet to the manifold.

21. A 1" metered water service for an external, non-freeze hose bib with reduced pressure backflow assembly shall be installed at the pump station site.

22. The Developer/Contractor shall supply and mount an emergency outlet and cover for connection to the District's mobile generator in the event of a power failure. Amperage of the outlet shall be determined by the available power supply. All stations, regardless of phases or voltage, shall be equipped with an Appleton reverse service receptacle, Model ADR1044-RS for the emergency generator connection or a District approved equal. The receptacle outlet cover shall be painted red if 480/277 or green if 208/120 voltage. The Developer may be required to furnish or participate in the cost of an auxiliary generator at the direction of the District.

A design report with plans shall be submitted with each lift station (custom designed or packaged) demonstrating its conformance with the standards as outlined above. The report shall also address the following items:

Pump Data:
- Size and type
- Design calculations for pump and wet well sizing
- Pump curves
- Head capacity
- Velocity
- Manufacturer / Distributor

Motor Data:
- Size and type
- Horsepower
- Service factor (1.15 min)
- Motor insulation
- Cycle length
- Full load amps
- Voltage
- Frame and type of mount
- Manufacturer / Distributor

Controls:
- Timers and relay mounting
- Motor starter size
- Phase monitor

- NEMA-type enclosure
- Thermal magnetic circuit breakers
- Alternator
- GFI outlet
- Indicating lights
- Level controls
- Telemetry failure points
- Elapse time meters
- Component Manufacturer / Distributor

Telemetry: - Must be compatible with District system

Housing:
- Size and type
- Ventilation
- Access
- Insulation
- Locking mechanism
- Hold open device
- Safety chain

Auxiliary Power: - Provision for connection required of all lift stations and may be required to furnish or participate in the cost of an auxiliary generator at the direction of the District

Well Sizing:
- Type
- Size
- Storage capacity
- Access
- Access to locking mechanism
- Welding
- Safety entry equipment

Maintenance:
- Warranty
- Staff training upon completion
- Tools and equipment required

Corrosion Protection:
- Type of materials
- Primer coating
- Finish coating
- Total thickness in mils, dry
- Linings
- Maintenance

Electrical Service:
- Specifications (service size, voltage, motor size, enclosure type, etc.)
- Source of power
- Calculations
- Single line diagram
- Primary distribution equipment
- Service entrance
- Branch circuiting
- Mechanical equipment power requirements
- Control diagrams & schematics
- Schedules of fixtures, panel boards & switch gear
- Shop drawings

Site Layout:
- Location of lift station on property with provisions for maintenance vehicle access and drive

Testing:
- Factory test
- Operational test
- Pressure test
- Personnel at test

Piping and Valves:
- Size and type
- Bypass
- Check valves
- Isolation valves
- Manufacturer / Distributor

Spare Parts:
- Spare motor (Flygt)
- One complete mechanical seal unit
- Two intrinsically safe relays
- One complete set of replacement O-rings for all components
- Spare gaskets for all components

Water Service:
- Water hose bib service (metered) connected to a reduced pressure backflow assembly installed inside an approved frost-proof box above grade.

3.4.2 Lift Station Inspection Checklist

The checklist found in **Appendix G** of this Manual will be used by the District when doing a final assessment of a newly constructed lift station. Additional items may be added depending on the type and style of station constructed. The list is provided to help the Developer/Contractor prepare for the final inspection. The pump test shall be conducted by the pump manufacturer's and general Contractor's representatives. The Developer's electrician shall also be present at the time of pump station testing.

3.4.3 Grinder Pumps

Where allowed for by formal approval of the District's Board of Commissioners, temporary side sewer connection grinder pump assemblies shall be manufactured by Environment One Corporation. Grinder pump stations shall be operated and maintained by the property owner.

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

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

See **Appendix D** of this Manual for the District's "Declaration of Restrictive Covenants & Notice For Grinder Pump" agreement.

See the "Pressure Sewer Notes" in **Appendix I** of this Manual.

3.5 Pressure System Design Standards

Pressure system force mains shall be used in conjunction with sanitary sewer lift stations. Pressure system side sewers shall be used with individual grinder pumps.

3.5.1 Force Mains

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

Material: Force mains for sizes 3-12 inches shall be ductile iron pipe meeting the requirements of Section 3.3.3 of this Manual.

Depth: Force mains shall have a minimum 62 inches of cover to top of pipe. This minimum assumes 36 inches cover to an 8-inch diameter (crossing) water pipe and 18 inches separation from the bottom of water pipe to the top of the force main. See Section 2.3.1 of this Manual for sanitary sewer/water main crossing requirements.

Velocity: The nominal design velocity to scour settled solids for a force main shall be 3.0 feet per second (fps). The minimum allowable velocity required to maintain solids in suspension shall be 2.0 fps. Maximum velocity allowed shall be 6.0 fps.

3.5.2 Pressure System Side Sewers

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

Individual grinder pump discharge pressure pipe shall be butt-fuse welded HDPE pipe meeting the requirements of Section 3.3.3 of this Manual. Pipe shall be installed with tracer wire per Section 3.3.11 of this Manual.

Fittings for HDPE side sewers shall be manufactured of brass or stainless steel.

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

The method of connection of pressure side sewers to the District's sewer system shall be determined and reviewed on a case by case basis.

3.5.3 Valves

All valves shall be ductile iron and epoxy coated or PE lined and designed for use with corrosive materials. Valves shall be Waterous Series 500 plug valves or an approved equal.

At every lift station, a force main isolation valve is required within ten feet of the station unless otherwise directed by the District. Valves shall be installed at all locations where the size of the pipe changes. Valves shall also be installed "in-line" between nodes at sufficient intervals to facilitate system repair, but in no case shall they exceed the following:

- Every 2,400 lineal feet for 4" diameter pipe
- Every 1,200 lineal feet for 6" diameter pipe
- Every 600 lineal feet for 8" diameter pipe

3.5.4 Force Main Drain

Provisions to drain a force main to facilitate repairs or to temporarily remove force main from service shall be provided. This shall be accomplished through the use of a valved tee connected to a drain line at the low point of the line as shown on Standard Detail SS32.

3.5.5 Thrust Blocking

Location of thrust blocking shall be shown on plans. Thrust block concrete shall be commercial class concrete poured against undisturbed earth. A plastic barrier shall be placed between all thrust blocks and fittings.

See Thrust Blocking Standard Details WA21, WA22, and WA23. Designed and approved restraining joint systems may be allowed in lieu of thrust blocking where blocking is not practical. Restraining joint brand, type, and size shall be specified on the plans.

3.5.6 Force Main Termination

Hydrogen sulfide odor (H2S) and the buildup of sulfuric acid (H2SO4) occur in the operation of a force main. Reaeration is required on all force mains where residence time of sewage from its arrival to the wet well to its discharge in the gravity sewer system exceeds 12 hours. To mitigate these conditions some type of control method(s) shall be used. This may include chemical addition at the pump station and/or the reaeration of the wastewater at or near the terminus. Reaeration may include the following:

- Construction of a vault housing an aspiration assembly. Developer shall be responsible for providing a proposed design/plan to meet this requirement.
- The use of hydraulic fall (vertical siphon within the terminal manhole).
- High velocity discharge with smooth transition so as to not cause splashing of force main into the downstream gravity sewer.

These methods all require an adequate source of fresh air at the vault or manhole.

Aerators shall be contained within an appropriately sized manhole or suitably constructed building.

The force main terminus manhole and the first manhole downstream of the terminus 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, 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.

Surface preparation and coating applications shall be under the direction of the product representative.

Manholes further downstream from the force main terminus manhole may be considered for these coating systems if evidence exists that the manhole(s) may be subject to premature damage due to corrosion.

In addition, a more stringent and aggressive coating system(s) may be required by the District where evidence exists that subject structures will be exposed to an irregularly high corrosive environment.

The Developer 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.

3.5.7 Pressure System Side Sewer Termination

For pressure system side sewer terminations, connection to the existing District system shall be determined on a case-by-case basis.

If a pressure system side sewer terminates in an existing manhole, or if it connects directly into a gravity sewer main, the terminus manhole or the first manhole downstream of the connection shall be coated with Tnemec 120 vinyl ester, Quantum polymorphic resin or approved equal, under the direction of the product representative. If a new gravity manhole is to be installed at, or directly downstream of, the terminus of a pressure system side sewer, this terminus manhole shall be epoxy coated.

The Developer 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.

3.6 Testing Sewers for Acceptance

Testing shall not occur until after completion of backfill, cleaning, and roadway subgrade construction, just prior to paving. This means all other utilities must already be installed and backfilled including telephone, cable, gas, water, and electricity.

3.6.1 Gravity Sewers

The Developer shall furnish all facilities and personnel for conducting tests under the observation of the District representative. The equipment and personnel shall be subject to the approval of the District.

a. Preparation for Testing

The Developer shall be required to test the complete gravity sewer system, including side sewer stubs, by the low-pressure air test method. Prior to testing, the Developer shall flush the new sewer service stub piping. The Developer shall then clean and flush the new sewer main with an approved Developer-provided cleaning ball and clean water. The ball shall be inflatable, diagonally ribbed rubber ball of a size that will inflate to fit snugly into the pipe to be tested. It shall be used with a tag line, or a rope or cord that is fastened to the ball to enable the Developer to know and control where the ball is at all times. The ball shall be placed in the most upstream cleanout, or manhole, on the pipe segment to be cleaned, and water shall be introduced behind it. The ball shall be passed through the pipe with only the pressure of the water impelling it. Flushing debris shall be collected in the most downstream manhole(s) of the development. No debris or sediment shall pass through to the existing sanitary sewer system. Debris shall be removed and disposed of by the Developer. In the event that cemented or wedged debris or a damaged pipe shall stop the ball, the Developer shall remove the obstructions and/or replace any damaged pipe. All cleaning shall meet the District's satisfaction. The cleaning shall be carried out in such a manner to not infiltrate existing facilities. Precautions shall be taken to prevent any damage caused by cleaning and testing. Any damage resulting from testing shall be repaired to the satisfaction of the District by the Developer, at his/her own expense. The manner and time of flushing shall be subject to the approval of the District.

b. Low Pressure Air Test

Gravity sewers shall be tested with low-pressure air by the pressure drop method. The procedures, as set forth in the following paragraphs, shall be used in conducting the low-pressure air test. The Developer shall furnish all equipment and personnel for conducting the test under the observation of the Engineer. The Developer may desire to make an air test prior to backfilling for his/her own purposes. However, the acceptance air test shall be made after backfilling has been completed and compacted and the final grade is prepared for surfacing. In addition to the pressure test requirements, the pipeline shall be free of all visible leakage prior to acceptance. All visible leaks showing flowing water in pipelines or manholes shall be stopped even if the test results fall within the allowable leakage.

(1) Low Pressure Air Test – Pressure Drop Method

All vertical cleanouts, and wyes, tees, or the end of side sewer stubs shall be plugged with flexible joint caps or plugs, securely fastened to withstand internal test pressures. Such plugs or caps shall provide a socket suitable for making a flexible, jointed lateral connection or extension. The use of double plugs shall be considered violation of District policy and will prohibit the construction company owner and project Superintendent from working on future water or sanitary sewer facilities in the District in perpetuity. The same consequence shall befall a Contractor that is caught maliciously tampering with testing equipment, modifying testing methods, or in any way tampering with the testing procedures approved by the District. This applies to testing of both sanitary sewer and water facilities.

Immediately following the pipe cleaning, the pipe installation shall be tested with low-pressure air using the pressure drop method. The Contractor shall provide the District certification that the gauge is calibrated and accurate. A maximum reach to be tested shall be the reach between two consecutive manholes. Air shall be slowly supplied to the pipe installation until the internal air pressure reaches 3.5 pounds per square inch greater than the average backpressure of any groundwater above the center of the pipe being tested. At least two minutes shall be allowed for temperature stabilization before proceeding further.

For non-air permeable pipe, the requirements of this specification shall be considered satisfied if the time required in seconds for the pressure to decrease from 3.5 to 2.5 lbs. per square inch under the above conditions is equal to or greater than times calculated per WSDOT Standard Specification 7-17.3(2)F.

The use of air pressure for testing sewer lines creates hazards that might not be recognized. The Developer shall make sure that all plugs are securely blocked to prevent blowout. The air testing apparatus shall be equipped with a pressure release device, such as a rupture disk or pressure relief valve, designed to relieve pressure in the pipe under test if air pressure gauge malfunctions.

3.6.2 Force Mains

Pressure testing of sanitary sewer force mains and pressure system side sewers shall meet the requirements of water main testing specified in Section 2 of this Manual and as specified in the WSDOT Standard Specifications.

3.7 Final Inspection

Prior to final inspection, all pipelines shall be flushed and cleaned, with all debris removed, and successfully tested.

Before sewer lines are accepted all lines shall be inspected for line and grade by checking each section between manholes for alignment. The District requires all sanitary sewers to be video inspected by the Developer before final acceptance. The costs incurred in making the inspection shall be borne by the Developer.

Variance from established line and grade shall not be greater than one thirty-second (1/32) of an inch per inch of diameter, and not to exceed one half (1/2) inch for pipes greater than 16-inches in diameter, provided that such variation does not result in a level or reversing slope invert; provided also that variation in the invert elevation between adjoining ends of pipe, due to non-concentricity of joining surface and pipe interior surfaces, does not exceed one sixty-fourth (1/64) of an inch per inch of pipe diameter, or one half (1/2) inch maximum.

3.7.1 Video Inspection of Sewer Pipelines

The Developer shall bear all costs incurred in correcting any deficiencies found during video inspection, including the cost of any additional complete system video inspection that may be required by the District to verify the correction of said deficiency. The video shall at a minimum include the following:

- A 1-inch diameter sphere shall be provided at the front of the video apparatus. The sphere shall rest on the invert of the pipe and be visible to the camera as it travels through the pipeline.
- The top of the pipe shall be shown on the video as being at the top of the screen (the top of pipe is "up").
- The recording shall be made using a color camera, self-propelled having sufficient light to show detail of pipe, joints, fittings, and any problem areas.
- The camera shall have a swivel head capable of looking up each sewer service stub connection. The camera shall stop, swivel and look at each sewer stub.
- The camera's speed shall not exceed three feet per second.
- If the operator sees a problem area or concern, the camera shall then be backed up and an extended look at the area will be recorded.
- Sound/narration provided by the operator stating the location of bends, tees, apparent deficiencies, etc.
- All recordings shall have the location by manhole to manhole, and street address, time, date and a footage counter displayed.
- The resulting video shall present visual verification as to the location of the sewer main inspection (video surrounding area before lowering camera into manhole).

Prior to performing the video test, a 5 gallon bucket of clean water shall be poured down the run of sewer main in order to highlight low spots.

Two copies of the written report showing stub locations and problem locations, and one electronic copy of the inspection in DVD format shall be submitted to the Owner for their review and permanent record.

A second video inspection may be required at the time of the 21-month facility assessment (prior to the expiration of the 2-year warranty period). Video inspection at this time will be used only if there is evidence or suspicion of damage or a deficiency. The Developer shall bear all expenses associated with obtaining the equipment, personnel, and materials required for completing each tests/inspections. The 21-month video, if necessary, shall be viewed and compared with the original video inspection to determine if any deficiencies are present. If deficiencies are found, the Developer shall bear all costs incurred in correcting any deficiencies, including the cost of any additional video inspection that may be required by the District to verify the correction of said deficiency.

APPENDIX A –Water and/or Sewer Availability Forms

- **District Availability Certificate Request Form**
- **King County Certificate of Water Availability with District Attachment**
- **King County Certificate of Sewer Availability with District Attachment**

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: _____

Web date: 10/05/2007

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

WATER AVAILABILITY:
KING COUNTY CERTIFICATE OF WATER 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):

Water purveyor information:

1. ☐ a. Water will be provided by service connection only to an existing _____ (size) water main that is _____ feet from the site.

OR

☐ b. Water service will require an improvement to the water system of:
- ☐ (1) _____ feet of water main to reach the site; and/or
- ☐ (2) The construction of a distribution system on the site; and/or
- ☐ (3) Other (describe): _____

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

OR

☐ b. The water system improvement is not in conformance with a County approved water comprehensive plan and will require a water comprehensive plan amendment. (This may cause a delay in issuance of a permit or approval.)

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 is within the County approved service area of a private water purveyor.

OR

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

4. ☐ a. Water is or will be available at the rate of flow and duration indicated below at no less than 20 psi measured at the nearest fire hydrant _____ feet from the building/property (or as marked on the attached map):

Rate of flow at Peak Demand: ☐ less than 500 gpm (approx. _____ gpm) ☐ 500 to 999 gpm ☐ 1000 gpm or more
☐ flow test of _____ gpm ☐ calculation of _____ gpm

Duration: ☐ less than 1 hour ☐ 1 hour to 2 hours ☐ 2 hours or more Other: _____

(**Note**: Commercial building permits which include multifamily structures require flow test or calculation.)

OR

☐ b. Water system is not capable of providing fire flow.

5. ☐ a. Water system has certificates of water rights or water right claims sufficient to provide service.

OR

☐ b. Water system does not currently have necessary water rights or water right claims.

Comments/conditions: _____

I certify that the above water purveyor 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

ATTACHMENT TO
KING COUNTY
CERTIFICATE OF WATER AVAILABILITY

The following terms and conditions apply to the attached "King County Certificate of Water 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 water service is available as of the Date of Issuance of the Certificate, the issuance does not guarantee that water 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.

Web date: 10/05/2007

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 existing _____ 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

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 B – Water and/or Sewer Connection Forms

- **Estimated Connection Fees**
- **Application for Water Service Connection**
- **Application for Sewer Service Connection**

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 $____ if applicable) *Charges over minimum will be billed at permit close out.	**$** _____
TOTAL SEWER	**$**
TOTAL WATER & SEWER	**$**

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

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

APPLICATION FOR WATER SERVICE CONNECTION

SERVICE ADDRESS_____

LEGAL DESCRIPTION_____

OWNER NAME _____PHONE _____

MAILING ADDRESS_____

Work to be Done:	☐ New Connection	OR	☐ Upgrade/Repair
	☐ Fire Sprinklers	OR	☐ No Fire Sprinklers
	☐ Irrigation System	OR	☐ No Irrigation System
	☐ Irrigation Meter	OR	☐ No Irrigation Meter
	☐ Inside Property	OR	☐ Outside Property
	☐ By Contractor	OR	☐ By Owner

Dwelling Type: ☐ Single Family ☐ Multi-Family #Units _____ ☐ Commercial

CONTRACTOR NAME _____

CONTRACTOR ADDRESS _____

CONTRACTOR PHONE _____ INS.EXP.DATE _____

CONTRACTOR REG.#_____ EXP.DATE _____

☐ *Current Contractor Registration/Insurance Provided* **REQUESTED INSTALL DATE** _____

****

Application is hereby made for water 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 the service being shut off, 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 water service construction within wetlands, steep slopes, setbacks or other sensitive or restricted areas. Nothing in this application 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.

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 and agreed that fees below are for service installation only. Skyway Water And Sewer District shall remain the owner of all water meters pipes and associated appurtenances from the District's water main to the meter. The water service line from the meter to the house/building is owned by the Applicant who is responsible for the same.

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

☐ Right of Way Permit Application Made

Date _____ By _____

☐ Right of Way Permit Received

Date _____ #_____

☐ Cross Connection Review

Date _____ By _____

☐ Recorded Easement Copy Provided

☐ Hold Harmless/Indemnity Signed

Meter Size _____ Make _____

Meter#: _____

Meter Install Date: _____

Assigned Acct# _____

Assigned Route# _____ Seq.# _____

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

Account Set-Up Date _____

BAT Certificate/Annual Test Notice Set-up

☐ Yes OR ☐ N/A

Service Begin Date _____

Receipt #: _____ Date: _____

WATER FEES

Meter/Service Installation	**$**_____
Local General Facilities Charge	**$**_____
Regional Capital Facilities Charge	**$**_____
TOTAL WATER	**$**_____

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 new 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

APPENDIX C – Application For Permission To Construct/Redevelop Water and/or Sewer Systems

SKYWAY WATER AND SEWER DISTRICT

King County, Washington

APPLICATION FOR PERMISSION TO

CONSTRUCT/REDEVELOP WATER AND/OR SEWER SYSTEMS

The undersigned, hereafter referred to as "Developer", hereby makes application to Skyway Water & Sewer District; King County, Washington; hereafter referred to as "District", for permission to redevelop, construct and install water and or sewer extensions in the public right-of-way and/or on easements, and to connect the same to the District's water distribution and/or sewer collection system, and makes the following representations and covenants:

This application is for redevelopment/extension to the District's

_____ Water system

_____ Sewer system

Upon approval of the Board of Commissioners, extensions to the District's sewer and water system may be made under written Agreement with the District by any landowner (also referred to as a Developer), subject to compliance with all applicable state laws and county ordinances or resolutions, and subject to compliance with the rules and regulations of the District as set forth in resolutions of the Board of Commissioners. Such extensions must be constructed and installed in accordance with the District's conditions, specifications, and construction details hereinafter set forth.

I. **DISTRICT**

The District promises, covenants, and agrees to the following terms and conditions:

(a) The District and/or its representative shall periodically inspect the Developer extension, while under construction, to verify that the Developer extension complies with the design standards and construction specifications of the District; and conforms with the present rules, regulations, and resolutions of the District and conforms to the terms of said Application. Such inspection shall in no way relieve the Developer of its responsibility for

compliance with the terms of the Application and Contract specifications as well as the rules and regulations as imposed by the County or other agencies.

(b) The District agrees to allow the Developer to make the connection to the present water and/or sewer system of the District upon the completion of the Developer extension by the Developer upon its fulfillment of the terms and conditions of the Contract, and when the Developer has delivered to the District a bill of sale, obtained the necessary permits and easements, and the extension has been approved by the consultants, and accepted by the Board of Commissioners. The action of the District shall be formalized by a resolution passed by the Board of Commissioners authorizing the District, through its staff, to make the connection between the Developer extension and the District's water and/or sewer system.

(c) Connection of the extension by the District shall not relieve the Developer of the obligations to correct defects in labor and/or materials as heretofore provided and/or the obligations set forth in the applicable paragraphs hereof. The connections of the extension authorized by the District's Board of Commissioners shall cause said extension to be subject to the control, use, and operation of the District, which shall be subject to all regulations and conditions of service.

II. **DEVELOPER**

(a) The Developer agrees to comply with requirements of the most current edition of Skyway Water & Sewer District's "Development Guidelines for Construction of Water & Sanitary Sewer Facilities", and the most current edition of "Standard Specifications for Road, Bridge, and Municipal Construction" as published by the Washington State Department of Transportation (WSDOT) and as supplemented (Division 1) by the American Public Works Association (APWA).

(b) For water extensions, the Developer's plan shall be in accordance with American Water Works Association (AWWA) standards and Washington State Department of Health requirements. For sewer extensions, the plan shall be in accordance with the State of Washington, Department of Ecology's "Criteria for Sewage Works Design", current edition.

(c) The Developer agrees to comply with all environmental requirements as set forth either by the District or by appropriate county, state, or federal agencies. The Developer agrees to prepare an environmental checklist or other environmental documents at its sole expense, if so directed by applicable lead agencies as set forth in the State Environmental Policy Act and applicable administrative regulations and laws of Washington. For extensions outside of the District boundaries but within the Comprehensive Plan, Developer shall obtain all necessary approvals including but not limited to review by the Boundary Review Board.

(d) The Developer's engineer shall prepare and sign the plans (design and construction contract documents). The engineer shall be professionally registered in the State of Washington. The Developer, simultaneously with the execution of this Application, shall make a deposit with the District of $6,000 per utility. Deposit funds shall be applied towards administration expenses, engineering and legal services, permits, inspections, plus a 15% administrative fee, and allied costs incurred by the District in connection with the developer extension project. District costs incurred over the deposit amount shall be billed by the District and paid by the Developer in a timely manner. A refund will be issued to the Developer upon project closeout if the deposit exceeds costs.

(e) Prior to the connection of the facility, the Developer shall sign a bill of sale, and actual time charges and expenses shall be determined and fees and costs shall be adjusted to provide for a refund by the District or additional payment by the Developer. If additional payment is required, the Developer shall make such payment to the District prior to the connection of the extension to the District's system.

(f) The Developer further simultaneously with the execution of this Application shall pay to the District any latecomer charges, charges in lieu of assessment, or connection charges, as they may pertain to the subject real property of the Developer extension.

III. **PLAN**

(a) The Developer shall submit a plan to the District that contains all necessary information required for the construction of the proposed improvements that comply with the District's Design Standards and Construction Specifications, and shall be updated and revised as necessary to indicate further development showing all utilities, roads, and drainage facilities. Complete architectural plans shall be submitted if requested. The Developer further agrees to furnish copies of final plat and/or surveys. The plan shall provide for the service line to extend through the entire property.

(b) The plan shall be submitted in reproducible form, the scale of which shall be 20, 30, or 40 scale. The plan shall be on 22"x34" reproducible. A completed checklist found in Appendix F shall accompany the submittal.

(c) Following the acceptance of the plan by the District and receipt by the District of a certificate of insurance complying with the insurance requirements, the execution and submittal of a performance bond, and a pre-construction conference held with all items covered and/or complied with on the "Pre-Construction Conference Review", the Developer may begin construction.

(d) All construction performed by and for the Developer will be in compliance with the most current edition of the Standard Plans and Specifications for Road, Bridge and Municipal Construction as published by WSDOT. The Developer shall have the responsibility to obtain copies of the Standard Specifications.

(e) The Developer agrees that there shall be no water or sewage flow through any mains or facilities constructed by the Developer prior to connection and acceptance of the extension by the District.

(f) The Developer shall create all roads to the design subgrade elevation prior to the start of construction and shall advise the District in writing of any changes, which may be contemplated during construction. If the Developer changes the subgrade elevation of the road after completion of the extension, or any part thereof, the Developer shall be responsible for all costs incurred as a result of such change in subgrade elevation. This obligation shall remain in full force until King County or such other appropriate municipality releases the right-of-way or road construction bond or bond of other descriptions in connection with the Developer's obligation for completion of the road within the area.

(g) Developer shall provide at no cost to the District one final set of "as built" plans and drawings. All such plans shall become the property of the District.

IV. **FEES**

Extension fees shall be paid by the property owner or Developer to the District in consideration of the District providing services in conjunction with this Agreement including but not limited to administration, engineering and legal services, permits, inspections, and allied costs, plus a 15% administrative fee.

An additional fee shall be paid to the District by the Developer for the following additional work, if performed:

(a) Revisions of the Contract plans and specifications and work occasioned by an act of the Developer relating thereto.

(b) Additional inspections. (County, State, others)

(c) Re-inspection of deficient work.

(d) Any permit or franchise acquired by District.

(e) Acts by the Developer that necessitate the District's Manager, staff or consultants to spend extraordinary time on the Developer extension, the costs shall be billed accordingly to the Developer. This fee shall be based on the actual time expended by the District or its consultant and be paid by the Developer upon receipt of an invoice from the District. Payment shall be a prerequisite for obtaining connection to the Developer extension and sewer service.

(f) The real property described in this contract shall be subject to all rates and charges established by the District.

V. **EVIDENCE OF INSURANCE**

(a) The Developer shall obtain and keep in force during the term of the Contract, Commercial General Liability insurance policies with insurance companies which have an A.M. Best's rating of A VII or better and who are approved by the Insurance Commissioner of the State of Washington pursuant to Title 48 RCW.

(b) Prior to the execution of the Contract, the Developer shall purchase and maintain during the term of this project a Commercial General Liability insurance policy meeting the requirements set forth herein. The Developer shall file with the District either a certified copy of all insurance policies or a Certificate of Insurance with such endorsements attached, as are necessary to comply with these specifications. Failure of the Developer to fully comply with the requirements regarding insurance will be considered a material breach of Contract and shall be cause for immediate termination of the Developer extension Agreement and of any and all District obligations, regarding same.

(c) The Developer shall not begin work under the Agreement or under any special condition until all required insurance has been obtained and until such insurance has been approved by the District. Said insurance shall provide coverage to the Developer, and the District. The coverage so provided shall protect against claims from bodily injuries, including accidental death, as well as claims for property damage which may arise from any act or omission of the Developer, his contractors, and their subcontractors, or by anyone directly or indirectly employed by either of them.

(d) The insurance policies shall specifically name the District, its elected or appointed officials, officers, employees, and volunteers as insureds with regards to damages and defense of claims arising from: (1) activities performed by or on behalf of the Developer, or (2) products and completed operations of the Developer, or (3) premises owned, leased, or used by the Developer. The insurance shall be maintained in full force and effect at the Developer's expense throughout the term of the Developer extension Agreement.

(e) The District shall be given at least 45 days written notice of cancellation, non-renewal, material reduction, or modification of coverage. Such notice to shall be by certified mail.

(f) The coverage provided by the Developer's insurance policies are to be primary to any insurance maintained by the District, except as respects losses attributable to the sole negligence of the District. Any insurance that might cover this Agreement that is maintained by the District shall be in excess of the Developer's insurance and shall not contribute with it.

(g) The Developer's insurance policies shall protect each insured in the same manner as though a separate policy had been issued to each. The inclusion of more than one insured shall not affect the rights of any insured as respects any claim, suit, or

judgment made or brought by or for any other insured or by or for any employee of any other insured. However, this provision shall not increase the limits of the insurer's liability.

(h) In addition, the Developer shall have its insurance agent/representative complete the Insurance Coverage Questionnaire contained in the proposal and attach it to the certificate of insurance along with all policy endorsements necessary to comply with these requirements, for District's approval. Notations made on the certificate of insurance as to satisfying these insurance requirements, is not sufficient evidence. Only endorsements to the effected policies will be accepted.

(i) The Developer shall maintain workmen's compensation insurance and/or longshore and harbor workmen's insurance as required by state or federal statute for all of his employees to be engaged in work on the project under this Contract and, in case any such work is sublet, the Developer shall require the subcontractor similarly to provide workmen's compensation insurance and/or longshore and harbor workmen's insurance for all of the latters' employees to be engaged in such work. The Developer's Department of Labor & Industries account number shall be noted on the certificate of insurance.

(j) In the event any class of employees engaged in the work under this Contract is not covered under workmen's compensation insurance or longshore and harbor workers insurance as required by state and federal statute, the Developer shall maintain and cause each subcontractor to maintain employer's liability insurance for limits of at least $1,000,000 each employee for disease or accident, and shall furnish the District with satisfactory evidence of such.

(k) The Developer shall be solely and completely responsible for safety and safety conditions on the job site, including the safety of all persons and property during performance of the work. The services of the District's employees or engineer's personnel in conducting construction review of the Developer's performance is not intended to include review of the adequacy of the Developer's work methods, equipment, bracing, scaffolding, or trenching, or safety measures in, on, or near the construction site. The Developer shall provide safe access for the District and its inspectors to adequately inspect the quality of work and the conformance with project specifications.

(l) The Developer shall be solely and completely responsible to perform all work and furnish all materials in strict compliance with all applicable state, city, county, and federal laws, regulations, ordinances, orders, and codes. The Developer's attention is directed to the requirements of the Washington Industrial Safety and Health Act, (WISHA), RCW 49.17.

(m) The contractual coverage of the Developer's policy shall be sufficiently broad enough to insure the provisions of the HOLD HARMLESS AND INDEMNIFICATION Agreement of this Contract.

(n) Nothing contained in these insurance requirements is to be construed as limiting the extent of the Developer's responsibility for payment of damages resulting from his operations under this Contract.

(o) The General Aggregate provision of the Developer's insurance policies shall be amended to show that the General Aggregate Limit of the policies applies separately to this project.

(p) The Developer's insurance policies shall not contain deductibles or self-insured retentions in excess of $10,000 unless approved by the District.

(q) The Developer's insurance policies shall contain a provision that the District has no obligation to report events that might give rise to a claim until a claim has been filed with the District's Board of Commissioners.

(r) Types and Limits of Insurance Required:

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

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

(t) The Developer 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.

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

VI. INDEMNIFICATION

The Developer shall defend, indemnify, and save harmless the District, its officers, employees and agents, from any and every claim and risk and all losses, damages, demands, suits, judgments, and attorney fees, and other expenses of any kind, on account of injury to or death of any and all persons and/or on account of all property damage of any kind, whether tangible or intangible, including loss of use resulting therefrom, in connection with the work performed under this Contract or caused or occasioned in; whole or in part by reason of the presence of the Developer or its subcontractors, or their property, employees or agent, upon or in proximity to the property of the District, or any other property upon which the Developer is performing any work called for or in connection with this Contract, except only for those losses resulting solely from the negligence of the District, its officers, employees, and agents.

Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Developer and the District, its members, officers, employees and agents, the Developer liability hereunder shall be only to the extent of the Contractor's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes Developer waiver of immunity under industrial insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties.

If a lawsuit arises in respect to this hold harmless provision, the Developer shall appear and defend that lawsuit at its own cost and expense, and if judgment is rendered or settlement made requiring payment of damages by the District, its officers, agents, employees, and volunteers, the Developer shall pay the same.

VII. **PERFORMANCE BOND**

The Developer shall furnish to the District a Performance Bond between the Developer and the District upon the form approved by the District and in an amount equal to one and one-half times the Developer's Engineer's approved estimated cost of the project, prior to the staking of the extension for construction.

The Performance Bond shall assure and guarantee the payment of all persons furnishing labor and materials and completion of the water and/or sewer extension including payment of all fees required herein in accordance with the terms of these extension documents and shall hold the District harmless form any claims, therefore, and shall be in the form(s) contained in these extension documents.

VIII. **EASEMENTS AND RIGHT OF ENTRY**

Any required easements and Rights of Entry shall be obtained by the Developer at his/her sole cost and expense, name the District as grantee, and a copy of such easement in a form acceptable to the District shall be delivered to the District prior to the time the Developer commences construction hereunder. Upon completion of construction and prior to acceptance of the extension by the District, the original easement shall be delivered to the District. The Developer shall provide all necessary easements at his sole cost regardless of changes in the Contract Plans, together with good and sufficient evidence of clear title, and if required, a title insurance policy in a sum not less than $5,000 per 500 feet of easement, insuring clear title to the easement in the District.

IX. **PERMITS**

(a) All the necessary permits from any governmental agency shall be obtained by the Developer directly, or, if required, the District will use its reasonable efforts to obtain the same at Developer's expense.

The Developer shall provide the District with necessary documents required to obtain the permits.

(b) For permits obtained by the Developer, copies of the same shall be furnished to the District.

(c) Developer and/or Contractor agrees 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.

(d) Developer and Developer's Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property.

X. **BILL OF SALE/MAINTENANCE BOND**

Developer agrees to execute a Bill of Sale prepared by the District prior to the connection of the Developer extension to the District's sewer system. Said Bill of Sale will provide for transfer of title of the constructed extension from the Developer to the District and will further include the following items:

(a) Developer is the lawful Owner of said property and that it is free from all encumbrances.

(b) All bills of labor and material have been paid.

(c) The Developer shall have the right to transfer the same and that it will warrant and defend the same against lawful claims and demands of all persons for two (2) years of the date of acceptance of the project by the Skyway Water & Sewer District's Board of Commissioners.

(d) The Developer conveys the extension to the District for the consideration of incorporating the system in the overall sewer and/or water system of the District.

(e) Developer further warrants that for a period of two (2) years from the date of the acceptance by the District that the sewer and/or water system will remain in working order and condition acceptable to the District and that Developer will repair or replace at his/her own expense any work or material that may prove to be defective during said two (2) year period of warranty. Developer shall provide a Maintenance Bond in the form included in this contract.

XI. **CONNECTION TO THE DISTRICT'S SYSTEM**

The Developer shall provide in writing no less than five working days notice of the Developer's intent to connect its extension to the District's system. The connection of the Developer's extension to the District's sewer and/or water system shall be observed by District personnel for the Developer's compliance with the approved construction documents and the District's "Guidelines for Construction of Water and Sanitary Sewer Facilities". No connection to the District's system shall be permitted unless the District has received proof of necessary permits and easement, and that necessary testing of the constructed facilities has been successfully completed. Prior to placing the connected sewer and/or water extension in service, the District shall have received the certification by the consultants for the District that the extension has been completed, and received from the Developer the approved Bill of Sale and payment of any applicable project fees and costs by the Developer to the District.

Any connection to the District's system shall not be considered permanent by the District until acceptance by the Board of Commissioners as provided in Section XII.

XII. ACCEPTANCE OF THE DEVELOPER'S EXTENSION BY RESOLUTION

Acceptance by the District of the Developer's extension shall be by resolution of the Board of Commissioners. Prior to passage of the resolution, the Board of Commissioners shall confirm that the Developer has completed and satisfied all of the terms and conditions of the Agreement and has provided all necessary documentation, including but not limited to permits, easements, bill of sale and maintenance bond, and paid to the District all required fees. The District's engineer and any other technical consultants involved in reviewing the Developer's extension shall provide a written recommendation to the Board of Commissioners regarding the acceptance of the Developer's extension.

XIII. LIMITATION OF PERIOD FOR ACCEPTANCE

(a) Completion: The extension shall be complete and accepted within one year of date of acceptance of this application by the District.

(b) Failure to Complete Construction: If the extension is not completed and accepted within one year from the date this application was approved by the District resolution, the Developer's rights under this Agreement shall cease and no sewer and/or water services shall be connected to such extension thereafter unless District consents to the renewal of the existing Application or Developer shall make a new Application, in either event, the Developer may be required to pay additional administrative fees and additional legal, engineering, and inspection costs as determined by the District.

In the event no new application or renewal of the existing application is made, the District may proceed to require completion of construction under the provision of the Developer's Performance Bond, if so determined, in the sole discretion of the District.

XIV. WARRANTY OF AUTHORITY

The undersigned Developer and additional owners warrant that they constitute the owners of all of the Developers property and upon request of the District agree to provide title insurance, at the District's option and at the Developer's sole cost and expense, establishing to the satisfaction of the District that the parties executing this application constitute to Developers of all the real property described and have the authority to execute this Agreement with respect to said real property.

XV. **ATTORNEY'S FEES**

In the event that either the District or the Developer commences any legal action relating to the provisions of this agreement, the prevailing party shall be entitled, is addition to all other amounts to which it is otherwise entitled by this agreement, to all costs of litigation, including but not limited to costs, witness, expert and reasonable attorneys' fees, including all such costs and fees incurred in appeal.

XVI. **LEGAL SERVICES**

All legal services rendered by the District's attorneys are rendered to the District and not the Developer. The charges for legal service herein are to reimburse the District for legal services it obtains in conjunction with this application and in administering the extension process. The Developer is encouraged to obtain its own counsel at any time during the extension process.

XVII. **LATECOMERS AGREEMENT**

The Developer may apply for a reimbursement or latecomer agreement with the District. The application shall be submitted to the District concurrently with the application to construct an extension to the water and/or sanitary sewer system. Thereafter, the Developer's right to apply to the District for a reimbursement agreement shall expire.

Upon compliance with the terms and conditions of the application and Contract documents furnished by the District to the above-named Developer, the District will accept said extension connections thereto, and provide sewer and/or water service through the extension to retail customers, subject to and in accordance with applicable laws, rules, regulations, and resolutions and policies of the District.

XVIII. **APPLICATION ACCEPTANCE**

ACCEPTANCE OF THIS APPLICATION BY THE DISTRICT CONSTITUTES A CONTRACT WITH THE APPLICANT, THE TERMS OF WHICH ARE EACH PARAGRAPH OF THIS MANUAL, THE DISTRICT'S MATERIALS, CONSTRUCTION AND STANDARD DETAILS SPECIFICATIONS SHEETS, THE EXTENSION IMPROVEMENT PLANS AND DESIGN APPROVED BY THE DISTRICT BOARD OF COMMISSIONERS AND ALL OTHER APPLICABLE DISTRICT REGULATIONS AND WASHINGTON LAW, INCLUDING RCW 57.22.

DEVELOPER, _____ an ____individual, a ____sole proprietorship, ____corporation, ____partnership, ____joint venture, ____limited liability company.

NOTE:

1. If the Developer is a corporation, this Agreement must be executed by its duly authorized representative and the Developer hereby warrants same.

2. If the Developer is a partnership, at least one of the general partners must sign this Agreement and indicate his/her capacity as such.

3. If the Developer is a limited liability company, this Agreement must be executed by its duly authorized manager.

DATED at _____, Washington, this _____ day of

_____, 20___.

DEVELOPER

Name: _____

Title: _____

Address: _____

Phone: _____

Fax:

_____

FOR INDIVIDUAL OR SOLE PROPRIETORSHIP:

STATE OF WASHINGTON)

) ss.

COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ signed this instrument and acknowledged it to be his/her free and voluntary act for the uses and purposes mentioned in the instrument.

Dated_____

Signature of

Notary Public_____

Name _____

My appointment expires _____

FOR CORPORATION OR PARTNERSHIP (REPRESENTATIVE CAPACITY):

STATE OF WASHINGTON)

) ss.

COUNTY OF KING)

I certify that I know or have satisfactory evidence that _____ signed this instrument, on oath stated that
(Signatory Name)

he/she was authorized to execute the instrument and acknowledged it as the _____ of _____, to be the
(Title/Position) (Corporation or Partnership)

free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated_____

Signature of

Notary Public_____

Name _____

My appointment expires _____

THE FOREGOING APPLICATION of _____ is accepted this_____ day of _____, 20___.

SKYWAY WATER & SEWER DISTRICT

King County, Washington

By_____

Cheryl Scheuerman, General Manager
6723 South 124th Street
Seattle, WA 98178
Phone: (206) 772-7343
Fax: (206) 772-5860

APPENDIX D –Utility Extension Forms and Examples

- **Performance and Guarantee Bond (2 pages)**
- **Assignment of Funds in Lieu of Performance Bond (2 pages)**
- **Insurance Coverage Questionnaire (1 page)**
- **Bill of Sale (1 page)**
- **Maintenance Bond (1 page)**
- **Reimbursement Agreement- Sample (4 pages)**
- **Declaration of Restrictive Covenants & Notice for Grinder Pump- Sample (4 pages)**

SKYWAY WATER & SEWER DISTRICT
6723 South 124th Street
Seattle, WA 98178

PERFORMANCE AND GUARANTEE BOND
(For Developer Projects)

Name of Extension: _____

KNOW ALL MEN BY THESE PRESENTS: That whereas, SKYWAY Water & Sewer District, King County, Washington, a municipal corporation, hereinafter designated as the "District", has entered into an application dated the _____ day of_____, 20____, with _____, hereinafter designated as the "Developer", whereby the Developer has applied to the District for permission and authority to install water and/or sewer improvements consisting of extensions to the water and/or sewer system as therein described, which Agreement is on file in the District office and by this reference is made a part thereof; and

WHEREAS, said Developer and his/her Contractor is required, under the terms of said Agreement to furnish the District a bond for the faithful performance of said Agreement in accordance with the conditions hereafter set forth, NOW, THEREFORE,

We, the undersigned Developer and Contractor, as principal, and _____ a corporation organized and existing by virtue of the laws of the State of Washington, and duly authorized to do a surety business in the State of Washington, as surety, are held and firmly bound unto the State of Washington, and said District in the sum of _____ ($_____), as detailed on the attached estimated construction cost itemization. This surety is equivalent to one hundred fifty percent (150%) of the estimated construction cost including State sales tax, for the payment of which we do jointly and severally bind ourselves, our heirs, executors, administrators, personal representatives, successors, and assigns by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that if the said principal, or his (or its) representatives, heirs, successors, and assigns shall well and truly keep and observe all of the covenants and conditions and Agreements in said Contract and shall faithfully perform all the provisions of the Contract and pay all laborers, mechanics, subcontractor, and materialmen and all persons who shall supply such person or subcontractors with provisions and supplies for carrying on such work and all legal, engineering, and other professional fees and other costs and charges incurred or made by the District and shall indemnify and save harmless the District, its officers and agents, from any monetary loss resulting from the breach of any of said terms, covenants, and conditions to be performed by the principal;

No change, extension of time, alteration or addition to the work to be performed under the Agreement shall, in any way, affect principal's or surety's obligation on this bond and surety does hereby waive notice of any change, extension of time, alternation, or additions thereunder.

This bond is furnished pursuant to the requirements of Section 39.08.010 et. seq. of the Revised Code of Washington and, pursuant to the requirements of the aforesaid application and in addition to the requirements of the aforesaid sections of the Revised Code of Washington, is made, executed, and delivered by the principal and surety to the District for the use and benefit of said District, together with all laborers, mechanics, subcontractors, materialmen, and all persons who supply such person or subcontractors with provisions and supplies for the carrying on the work covered by the Agreement, irrespective of whether or not such work is deemed to be "public work", within the purview of said Revised Code of Washington.

IN WITNESS WHEREOF, the said principal and the said surety have caused this bond to be signed and sealed by their duty-authorized officers this _____ day of _____, 20___.

_____

Principal (Developer)

By _____

_____

Contractor

By _____

_____

Surety

_____

Address

_____

Telephone Number

SKYWAY WATER & SEWER DISTRICT
6723 South 124th Street
Seattle, WA 98178

ASSIGNMENT OF FUNDS IN LIEU OF PERFORMANCE BOND

The undersigned Developer, _____ agrees to deposit with the undersigned financial institution, _____, the sum of _____ dollars ($_____), as and for a cash guarantee that said Developer will faithfully and fully perform each and every provision of that certain Developer Extension Agreement ("Agreement") dated _____for property at_____. A detailed itemization, including sales tax, of the estimated construction cost used to determine the cash guarantee is attached.

The undersigned financial institution does promise and agree to pay to Skyway Water & Sewer District (hereinafter the "District") upon demand, the amount of said guarantee deposit upon the District's request for same, and stating that said Agreement has not been fully and satisfactorily performed; and

The Developer authorizes and directs said financial institution to release said funds upon said demand, and will look directly to the District and not to the financial institution, to resolve any dispute said Developer may have as to the Districts rightful claims to said sum;

The financial institution does promise and agree that these funds will be separate and in trust for the District and shall not be subject to assignment, release, attachment and/or claim by said financial institution and/or any third party, and that said funds shall be held until such time as the financial institution receives a written release from the Board of Commissioners or the General Manager of the District.

It is agreed that the funds referred to herein shall be and remain the property of the District until the financial institution receives the release from said District; and District does hereby promise and agree that the Developer shall be entitled to any and all interest that may accrue during the period of this Assignment, but shall not have any right, claim or interest in the funds.

Developer agrees that its obligation to perform the work under the Agreement is not limited to the funds held by the financial institution.

In the event that any litigation between the parties hereto is commenced over the subject matter of this Assignment, then the prevailing party shall be entitled to recover its reasonable attorneys' fees from the other parties.

Executed at _____, Washington, this _____ day of _____, 20____

By: _____

Name: _____

Title: _____

Acceptance by Financial Institution:

Financial Institution: _____

Address: _____

_____

Telephone Number: _____

Contact Person: _____

_____ hereby accepts the foregoing Assignment of Funds and agrees to hold the sum of _____ Dollars ($_____) in Account No. _____ for the benefit of District pursuant to the terms of said Assignment until a written release from District is received. The undersigned financial institution agrees to record on its internal records notice of the fact that the above-numbered account has been assigned to District. The financial institution further agrees to not allow the transfer of all or any portion of such amount from said Account without the prior written consent of District.

By: _____

Name: _____

Title: _____

Acceptance by District:

Skyway Water & Sewer District, a municipal corporation, hereby accepts the above-indicated Assignment of Funds in lieu of the Developer's obligation to provide the District with a Performance Bond, under the Agreement.

By: _____

Name: _____

Title: _____

SKYWAY WATER AND SEWER DISTRICT
6723 South 124th Street
Seattle, Washington 98178

INSURANCE COVERAGE QUESTIONNAIRE

NOTE: THIS QUESTIONNAIRE MUST BE COMPLETED AND ATTACHED TO CERTIFICATE OF INSURANCE

For _____
(Name of Insured)

Project Number _____

Project Owner _____

Are the following coverages and/or conditions in effect?

	YES	**NO**
The Policy form is ISO Commercial General Liability form CG 00 01 or CG 00 02 (circle one). If no, attach a copy of the policy with required coverages clearly identified.		
Products and Completed Operation Coverage		
Cross Liability Clause (or equivalent wording)		
Personal Injury Liability Coverage (with employee exclusion deleted)		
Broad Form Property Damage with X, C, U Hazards included		
Blanket Contractual Liability Coverage Applying to this Contract		
Employers Liability - Stop Gap		

Deductibles or SIR's: GL_____ AL _____ Excess _____

Insurors Best Rating: GL _____ AL _____ Excess _____

This questionnaire is issued as matter of information. This questionnaire is not an insurance policy and does not amend, extend, or alter the coverage afforded by the policies indicated on the attached Certificate of Insurance.

_____ _____
Agency/Broker Completed by (Type)

_____ _____
Address Completed by (Signature)

_____ _____
Name of Person to Contact Telephone Number

SKYWAY WATER AND SEWER DISTRICT
6723 South 124th Street
Seattle, Washington 98178

BILL OF SALE

The undersigned hereby conveys and transfers to Skyway Water & Sewer District of King County ("District") the following personal property located at _____:

_____ feet of _____ water and/or sewer lines and appurtenances with a cost value of $_____, including Washington State sales tax. A detailed itemization of the construction cost is attached. This itemization shall represent the total project cost, including but not be limited to design, permitting, engineering, construction including roadway overlay(s) including sales tax, and project closeout.

The undersigned warrants that it is the lawful owner of the above-described facilities and appurtenances and that said personal property is free from all encumbrances and that all bills for labor and material have been paid. The undersigned has the right to transfer the above described facilities and appurtenances and will warrant and defend the same against lawful claims and demands of all persons for a period of two years from the date of acceptance of the Bill of Sale by the District. The undersigned further warrants that the above described facilities and appurtenances were installed in accordance with the regulations and specifications of the District.

The undersigned warrants that for a period of two years from the date of acceptance by the District that said facilities and appurtenances will remain in good working order and condition acceptable to the District and that the undersigned will repair or replace, at its own expense, any work or material that is defective during the two year warranty period. The date of acceptance by the District is _____, _____.

This conveyance is made in consideration of the District's agreement to accept ownership of said facilities and appurtenances and to include them as an extension to the District's utility system.

I certify under penalty of perjury and the laws of the State of Washington that the foregoing is true and correct to the best of my knowledge. Dated at _____, Washington this _____ day of _____, 20___

_____
Name

_____
Representing

Bill of Sale accepted by District on _____, 20_____

_____
Cheryl Scheuerman, General Manager

SKYWAY WATER AND SEWER DISTRICT
6723 South 124th Street
Seattle, Washington 98178

MAINTENANCE BOND

BOND NO. _____

Developer: _____

Surety: _____

Amount: _____

Project Name: _____

KNOW ALL MEN BY THESE PRESENTS, that we _____ as Principal, and _____, as Surety, are held firmly bound unto SKYWAY WATER & SEWER DISTRICT, as Obligee, in the full and just sum of _____ _____ dollars ($_____), for the payment of which sum, well and truly to be made, we bond ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents. The above sum is certified to be one tenth (1/10) of the construction costs of the water / sewer (circle one or both) extension. A detailed itemization, including sales tax, of the construction cost is attached.

WHEREAS, the said construction of the extension has been completed, and the work was accepted on _____, 20_____.

WHEREAS, said application and extension documents provide that the principal will furnish a bond conditioned to guarantee against all defects in workmanship and materials discovered by the District for a period to two years after the date of final acceptance of said sewer extension by the District, and

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if within two (2) years from the date of acceptance by the District of said sewer extension, the work done under the terms of said application and extension documents shall disclose defects in workmanship in the execution of said work, and the carrying out of the terms of said extension documents, or it shall appear that defective materials were furnished thereunder, then this obligation shall remain in full force and virtue, otherwise this instrument shall be void.

Signed and sealed this _____ day of _____, 20_____

_____ _____
Surety Principal

Address _____

By: _____
Attorney-in-Fact

Skyway Water & Sewer District
REIMBURSEMENT AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 20_____, between Skyway Water & Sewer District, a municipal corporation ("District") and _____ ("Owner").

R E C I T A L S:

District is a duly organized water and sewer district under the laws of the State of Washington, and is empowered to furnish both water and sewer service, among other things, to property owners within and without the District in the manner provided by law; and

Owner entered into a Developer Extension Agreement dated the _____ day of _____, 20_____ ("Extension Agreement") with District for the construction and installation of sewer and/or water system extensions to provide service to the area described on Exhibit "A" ("Tributary Service Area") attached hereto; and Owner completed installation of the system extension in accordance with the terms of the Extension Agreement, portions of which are a benefit to real property within (and without) the District other than the Tributary Service Area, which consists of sewer and/or water lines of a size and location described on Exhibit "B" attached hereto and designated "Extension Facilities"; and Owner is entitled to reimbursement from developers and real property owners who subsequently connect to or use such Extension Facilities for the cost of such facilities in excess of Owner's fair pro rata share thereof, which costs have been determined as set forth below; and

Pursuant to the provisions of Chapter 57.22 RCW, District is authorized to enter into reimbursement agreements with parties constructing extensions to the District's sewer and/or water systems for reimbursement to such parties from connection charges received by the District from other property owners who subsequently connect to or use such facilities and who did not contribute to the original cost of such facilities; and

Owner is entitled to a reimbursement agreement for and related to its installation of the Extension Facilities; and the Owner and the District now desire to provide for such reimbursement subject to the terms and conditions set forth herein; now therefore,

IN CONSIDERATION of the following terms and conditions, the District and the Owner agree as follows;

Completion of Facilities. The installation of the Extension Facilities described in Exhibit "B" in the Tributary Service Area have been completed by Owner under an Extension Agreement with District; and title thereto has been transferred to District, and such Extension Facilities are a part of the District Sewer and/or water system.

Records/Costs. Owner has kept accurate records which have been provided to the District of the actual cost of installing such Extension Facilities in accordance with the Extension Agreement; and the District has reviewed and accepted the costs of such Extension Facilities as reasonable and actual costs and District accepts such costs as costs which are subject to reimbursement; and District agrees to reimburse Owner in the manner and on the terms and conditions set forth in this Agreement; and Owner agrees to reimburse the District all costs and charges incurred by the District to prepare and set up the reimbursement contract referenced herein, including but not limited to, all legal, engineering and administrative costs and charges.

Method of Reimbursement. *to be determined*

Benefited Properties. The properties benefiting from the installation of the Extension Facilities that have not contributed to the original cost thereof are as described on Exhibit "C" attached hereto.

Charges. *to be determined*

Amount. District shall collect the pro rata share of the cost of construction and contract administration costs of the Extension Facilities as a charge from the owners of benefited properties set forth on Exhibit "C" desiring to connect to or use the Extension Facilities. The amount of such connection charges to be collected prior to such connection is set forth on Exhibit "C". Such charges may include, but are not limited to, pro rata share of District legal, engineering, administrative, set-up, handling and actual costs of the Extension Facility. Such reimbursement charges shall be in addition to all other District charges in effect at the time of seeking connection to such Extension Facilities. Upon application by affected property owners, the District may further segregate reimbursement charges attributed to property benefited by the Extension Facilities. All costs of such segregation shall be borne by the party requesting such segregation.

Payment. Upon payment to the District of a reimbursement charge as provided herein, District shall first deduct it's charge to cover its administrative costs, and the remaining balance shall be paid over to Owner within sixty (60) days after receipt thereof, District to follow its established procedures of depositing such finds received with the King County Treasurer and drawing upon the same and effecting payment by King County Treasurer Warrant in the manner provided by law.

Charge; Satisfaction and Discharge. The amounts payable by property owners desiring to connect to the Extension Facilities shall be recorded as a charge upon such real property until paid. When paid, the charge shall be satisfied and discharged of record. Owner hereby appoints the Secretary of the Board of Commissioners, or his/her successor, as its attorney-in-fact, to prepare, execute and file for record with King County a document appropriate to cancel the charge and release the obligation of the benefited property owners to pay the reimbursement amount to District, and which will describe the real property so connecting and paying the reimbursement amount, and thereupon this agreement shall no longer apply to such real property. This appointment as attorney-in-fact is revocable during the existence of this Agreement.

Payment Procedure. The District shall forward reimbursement funds referenced herein to Owner at Owner's address provided herein or to Owner's agent as authorized by Owner to the District in writing. As a condition of receiving such reimbursement funds, the District may require Owner or Owner's agent to execute a receipt to the District for such reimbursement amounts so paid upon a receipt form provided by the Owner.

In the event of a dispute as to the rightful party to receive such funds, District may pay the same to the Owner referenced herein or interplead such funds to the court; in either event, District shall thereupon be relieved of any further obligation or of any liability hereunder as to such reimbursement funds so paid.

District Authority: Effective Date. District is authorized to enter into this agreement by virtue of the provisions of Chapter 57.22 RCW. This Agreement shall remain in full force and effect for a period of ten (10) years from the date of acceptance of title to the Extension Facilities referenced herein by District from Owner, which date shall be the effective date of this contract.

Recording. This contract shall be recorded in the office of the King County Auditor, King County, Washington, immediately upon execution by the District and the Owner. Such contract shall constitute a charge and obligation upon the real properties described on Exhibit "C" not contributing to the original cost of the Extension Facilities under the provisions hereof, and shall be binding upon the present owner thereof, and all successors in interest to those respective parties.

Indemnification. The District will use its best efforts to collect and distribute the funds pursuant to the process set forth in this Agreement. However, the District, its officials, employees or agents shall not be held liable or responsible for failure to implement any of the provisions of this Agreement unless such failure was willful or intentional. Owner agrees to indemnify and hold the District harmless from any liability or damages of any nature or kind whatsoever arising out of claims and/or suits filed against the District as a result of any action taken pursuant to this Agreement, and shall defend the District whenever the District is named in a suit in which this Agreement is at issue and pay all costs of such defense, including but not limited to attorney and expert witness fees and costs.

General. This Agreement constitutes the entire agreement between the parties. All exhibits referred to herein are by this reference made a part of this Agreement as though set forth in full. This Agreement is binding upon the heirs, executors, administrators, successors and assigns, of each of the parties hereto.

Assignment. The Owner shall not assign the whole or any part of this Agreement without the prior written consent of the District.

SKYWAY WATER AND
SEWER DISTRICT ("District")

By_____

Title_____

_____
("Owner")

By_____

Title_____

Address_____

Telephone_____

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: _____

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: _____

When recorded return to:

Skyway Water & Sewer District
6723 South 124th Street
Seattle, WA 98178

Skyway Water & Sewer District
DECLARATION OF RESTRICTIVE COVENANTS
& NOTICE FOR GRINDER PUMP

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 _____

(revised August 27, 2002)

APPENDIX E –Miscellaneous Forms and Examples

- **Private Water Utility Easement- Sample (5 pages)**
- **District Water Utility Easement- Sample (5 pages)**
- **Private Sewer Utility Easement- Sample (5 pages)**
- **District Sewer Utility Easement- Sample (5 pages)**
- **Joint Side Sewer Utility Easement Agreement- Sample (7 pages)**
- **Declaration of Restrictive Covenants & Notice for (Water/Sewer) Service- Sample (3 pages)**

When recorded return to:

GRANTEE ADDRESS here

PRIVATE WATER 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 WATER UTILITY EASEMENT is between _____

_____, hereinafter "Grantor," and _____

_____, hereinafter, "Grantee".

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 water 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 water 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 water 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 water 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

When recorded return to:

Skyway Water & Sewer District
6723 South 124th Street
Seattle, WA 98178

DISTRICT WATER 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: Skyway Water & Sewer District, a Municipal Corporation

THIS WATER UTILITY EASEMENT is between _____

_____, hereinafter "Grantor," and Skyway Water & Sewer District, hereinafter, "Grantee."

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 water 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 water 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 water 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 water 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, on oath stated that he/she is authorized to execute the instrument and acknowledged it, as _____ of _____, to be the free and
(title/signing capacity) (company/corporation)

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

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

When recorded return to:

Skyway Water & Sewer District
6723 South 124th Street
Seattle, WA 98178

DISTRICT 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: Skyway Water & Sewer District, a Municipal Corporation

THIS SEWER UTILITY EASEMENT is between _____

_____, hereinafter "Grantor," and Skyway Water & Sewer District, hereinafter, "Grantee."

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, on oath stated that he/she is authorized to execute the instrument and acknowledged it, as _____ of _____, to be the free and
(title/signing capacity) (company/corporation)
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

When recorded return to:

GRANTEE and GRANTOR ADDRESSES 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

After recording mail to:

_____

_____

_____

DECLARATION OF RESTRICTIVE COVENANTS & NOTICE FOR (WATER/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 (water/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. (Water/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 (water/sanitary sewer) service connection shall be located about _____feet from the (water/sanitary sewer) main in a private utility easement. Declarant shall be responsible for the repair, maintenance and replacement of the (water/sanitary sewer) service connection located between the (water meter/sewer main) and the residence. *The water meter shall be located near the water main* (water only).

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 _____

APPENDIX F – Water and Sewer Checklists

- **Water Checklist**
- **Sewer Checklist**

SKYWAY WATER & SEWER DISTRICT

DEVELOPER EXTENSION CHECKLIST
WATER

Name of Development _____

King County Lot # _____ Sec. _____ Twp. _____
Range _____

DEVELOPER

Name: _____

Type of Business: □ Corporation □ Limited Liability Company
□ Partnership □ Sole Proprietorship
□ Joint Venture

Address: _____

Phone: _____

Fax: _____

Contact Person: _____

Cell Phone: _____

E-mail: _____

DEVELOPER'S ENGINEER

Name: _____

Address: _____

Phone: _____

Fax: _____

Contact Person: _____

Cell Phone: _____

E-mail: _____

License Number: _____

CONTRACTOR

Name: _____

Address: _____

Phone: _____

Fax: _____

Contact Person: _____

Cell Phone: _____

E-mail: _____

License Number: _____

Sub-Contractors (Company name, contact, phone number)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

PHASE 1- Request of Water Availability

Date Completed		Description of Checklist Item (Responsible Party)
_____	1.	Complete a Water Availability Request Form and submit to the District (Developer)
_____	2.	District review of application and provides letter of approval/denial (District)
		If request is denied, complete 3 or 4, otherwise go to Phase 2
_____	3.	Submit written proposal to address deficiencies in existing system (Developer)
_____	4.	Submit a letter of project cancellation to District (Developer)

PHASE 2 – Permit Application and Water Extension Design

Date Completed		Description of Checklist Item
_____	1.	Complete Application to Construct Extension to Water System (Developer) ***Submit to District with required non-refundable deposit***
_____	2.	Optional Reimbursement Agreement Process (Developer) ***See requirements at end of Checklist***
	3.	Skyway Water & Sewer's Board of Commissioner's "Acceptance by Resolution" of the Application to Construct Extension to Water System (District)
_____	4.	Optional pre-design meeting (Developer)
_____	5.	Submit Engineered Plans to the District for Review; at a minimum the plans must include the following information (Developer)

Check when completed	Description of Checklist Item
_____	No combined water and sewer plans will be accepted.
_____	Owner's (Developer's) name, address, phone number, contact person, District's logo, and approval block.
_____	Section, Township, Range indicated on plans.
_____	Vicinity Map.

PHASE 2 – Permit Application and Water Extension Design

Date Completed	Check when completed	Description of Checklist Item
	5.	*Continued from previous page*
	_____	North Arrow at top left or right of plan. North shall be oriented to the top or to the left on the sheet.
	_____	Indicate Datum and Basis of Bearing.
	_____	Include the District's Standard Construction and Water Notes and pertinent details (available electronically from the District).
	_____	Include R/W lines, centerline of R/W, lot lines, lot numbers, street names, and address' of existing structures.
	_____	Original Drawings will be on 22" x 34" mylar sheets. If drawings exceed one (1) sheet, a cover sheet and index will be required.
	_____	Show all existing utilities in plan view and all utility crossings in profile.
	_____	Show proposed water line in plan and profile.
	_____	Size, type of pipe, distance between fittings shall be shown.
	_____	Indicate 36" minimum cover over proposed water.
	_____	Provide exploded view details of pipe intersection; call out and show all fittings, valves, and hydrants.
	_____	Provide a schedule or listing of each fitting and valve called out on the construction plans.
	_____	Provide a water service to each lot adjacent to the proposed water main.
	_____	For 1-1/2" water meter or larger, provide proper unobstructed straight pipe diameters (6 minimum) upstream and (1) downstream.
	_____	Provide a blow-off at all low points in the water main and at the termination of all main lines. Provide an air-vacuum valve assembly at all high points in the water main.

PHASE 2 – Permit Application and Water Extension Design

Date Completed		Check when completed	Description of Checklist Item
	5.		*Continued from previous page*
		_____	Provide all special design considerations such as backflow prevention, pump stations, and backflow prevention valve assemblies on the Plans.
		_____	Hydrants shall be located per King County Fire District No. 20 requirements and shown on the plans.
		_____	Location of line, bends, valves, fire hydrants, etc., shall be shown in such a manner that the system can be staked for construction.
		_____	Scale of drawings by bar scale shall be shown on the Plans – plans shall be 20, 30, or 40 scale.
		_____	All permanent easements shall be shown and called out on the Plans.
		_____	Developer's Engineer's name, stamp, signature and date signed shall be included on each sheet of the Plans.
_____	6.		District Review of Plans (District)
_____	7.		Revision and Resubmittal #1- if needed (Developer)
_____	8.		District Review of Resubmittal #1- if needed (District)
_____	9.		Revision and Resubmittal #2 - if needed (Developer)
_____	10.		District Review of Resubmittal #2- if needed (District)
_____	11.		Revision and Resubmittal #3 - if needed (Developer)
_____	12.		District Review of Resubmittal #3- if needed (District)
_____	13.		Prepare Easements documents if Required (Developer)
_____	14.		District Review of Easement Documents (District)
_____	15.		Revisions to Easement if Required (Developer)
_____	16.		Record Easement Documents (District)

PHASE 2 – Permit Application and Water Extension Design

Date Completed		Check when completed	Description of Checklist Item
_____	17.		Obtain the following permits and/or complete the review process where required:
			_____Right-of-Way use permit (District)
			_____Grading permit- private property (Developer)
			_____Grading permit- public right-of-way (District)
			_____SEPA Checklist (Developer)
			_____EIS permit (Developer)
_____	18.		Plans Approved for Construction - (District provides approval letter)
_____	19.		Submit Developer's Engineer's Estimate of probable costs and Performance Bond (Developer)
_____	20.		Schedule Pre-Construction Meeting (Developer)
			Date of Meeting: _____
	21.		Submit Material Submittals to the District for review and approval (Developer)

PHASE 3 – Construction

Date Completed		Description of Checklist Item
_____	1.	Construction Begins
_____	2.	Construction Complete
_____	3.	Purity Test Complete
_____		Purity Retest #1: Pass_____ Fail_____
_____		Purity Retest #2: Pass_____ Fail_____
_____		Purity Retest #3: Pass_____ Fail_____
_____	4.	Hydrostatic Testing Complete
_____		Hydrostatic Retest #1: Pass_____ Fail_____

PHASE 3 – Construction

Date Completed		Description of Checklist Item
	4.	*Continued from previous page*
_____		Hydrostatic Retest #2: Pass_____ Fail_____
_____		Hydrostatic Retest #3: Pass_____ Fail_____
_____	5.	Set Water Meter- Locked in "Off" Position
_____	6.	Return (fire hydrant) double check valve assembly and associated water meter to the District

PHASE 4 – Post Construction

Date Completed		Description of Checklist Item
_____	1.	Submit As-built Drawings to the District for Acceptance. The As-builts must be stamped by a Washington State-licensed Professional Engineer or Land Surveyor. (Developer)
_____	2.	Revisions to As-builts if required (Developer)
_____	3.	Complete Bill of Sale (Developer and District)
_____	4.	Submit Maintenance Bond (Developer)
		Submit Competed Checklist to District for Records (Developer)
_____	5.	Acceptance Granted by Board of Commissioners (District)
		2-Year Warranty begins (Developer)
_____	6.	Water Meters unlocked and placed into service (District)
_____	7.	2-year Warranty assessment of facilities at month 21 following District's acceptance of construction. (District/Developer)
_____	8.	Correction of system deficiencies if necessary (Developer)
_____	9.	End 2-year maintenance bond (Developer)
_____	10.	Project Closeout. Release of Maintenance Bond (District)

Reimbursement Agreement Process (If Applicable)

Date Completed		Description of Checklist Item
_____	1.	Submit Request to District to consider a Reimbursement Agreement concurrent with application to construct extension (Developer)
_____	2.	District Review of Request and written response (District)
_____	3.	If request approved, define reimbursement agreement boundaries (District)
_____	4.	Create reimbursement agreement document (Developer)
_____	5.	Review of reimbursement agreement (District)
_____	6.	Revision and Resubmittal #1- if needed (Developer)
_____	7.	District Review of Resubmittal #1- if needed (District)
_____	8.	Revision and Resubmittal #2 - if needed (Developer)
_____	9.	District Review of Resubmittal #2- if needed (District)
_____	10.	Revision and Resubmittal #3 - if needed (Developer)
_____	11.	District Review of Resubmittal #3- if needed (District)
_____	12.	Reimbursement Agreement recorded on property title (District)

SKYWAY WATER & SEWER DISTRICT

DEVELOPER EXTENSION CHECKLIST
SEWER

Name of Development _____

King County Lot # _____ Sec. _____ Twp. _____
Range _____

DEVELOPER

Name: _____

Type of Business: ☐ Corporation ☐ Limited Liability Company
☐ Partnership ☐ Sole Proprietorship
☐ Joint Venture

Address: _____

Phone: _____

Fax: _____

Contact Person: _____

Cell Phone: _____

E-mail: _____

DEVELOPER'S ENGINEER

Name: _____

Address: _____

Phone: _____

Fax: _____

Contact Person: _____

Cell Phone: _____

E-mail: _____

License Number: _____

CONTRACTOR

Name: _____

Address: _____

Phone: _____

Fax: _____

Contact Person: _____

Cell Phone: _____

E-mail: _____

License Number: _____

Sub-Contractors (Company name, contact, phone number)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

PHASE 1- Request of Sewer Availability

Date Completed		Description of Checklist Item
_____	1.	Complete a Sewer Availability Request Form and submit to the District (Developer)
_____	2.	District review of application and provides letter of approval/denial (District) ***If request is denied, complete 3 or 4, otherwise go to Phase 2***
_____	3.	Submit written proposal to address deficiencies in existing system (Developer)
_____	4.	Submit a letter of project cancellation to District (Developer)

PHASE 2 – Permit Application and Sewer Extension Design

Date Completed		Description of Checklist Item
_____	1.	Complete Application to Construct Extension to Sewer System (Developer) ***Submit to District with required non-refundable deposit***
_____	2.	Optional Reimbursement Agreement Process (Developer) ***See requirements at end of Checklist***
	3.	Skyway Water & Sewer's Board of Commissioner's "Acceptance by Resolution" of the Application to Construct Extension to Sewer System (District)
_____	4.	Optional pre-design meeting (Developer)
_____	5.	Submit Engineered Plans to the District for Review; at a minimum the plans must include the following information (Developer)

Check when completed	Description of Checklist Item
_____	No combined water and sewer plans will be accepted.
_____	Owner's (Developer's) name, address, phone number, contact person, District's logo, and approval block.
_____	Section, Township, Range indicated on plans.
_____	Vicinity Map.
_____	North Arrow at top left or right of plan. North shall be oriented to the top or to the left on the sheet.
_____	Indicate Datum and Basis of Bearing.

PHASE 2 – Permit Application and Sewer Extension Design

Date Completed	Check when completed	Description of Checklist Item
	5.	*Continued from previous page*
	_____	Include the District's Standard Construction and Sewer Notes and pertinent details (available electronically from the District).
	_____	Include R/W lines, centerline of R/W, lot lines, lot numbers, street names, and address' of existing structures.
	_____	Original Drawings will be on 22" x 34" mylar sheets. If drawings exceed one (1) sheet, a cover sheet and index will be required.
	_____	Show all existing utilities in plan view and all utility crossings in profile.
	_____	Show proposed sewer line in plan and profile.
	_____	Size, type of pipe, length of pipe shall be shown.
	_____	Indicate 72" minimum cover over the proposed sewer main.
	_____	The maximum length between manholes is 400 feet.
	_____	Two-foot contour intervals – show the existing and proposed topography for entire property. If the property is flat, provide spot elevations.
	_____	Provide a sewer service stub to each lot adjacent to the proposed sewer main.
	_____	Show rim and invert elevations at point of connection. These elevations must be field verified and indicated as such on the design plans. If connection is between two existing manholes, invert and rim elevations of upstream and downstream manholes is required.
	_____	Use the 0.8 depth rule where two dissimilar sewer line diameters meet at a manhole. If the larger line is a sewer interceptor larger than 15 inches in diameter, then match crowns of the two pipes. (0.8 depth rule – match pipes at 0.8 of their diameter above the invert)
	_____	Manholes and cleanouts shall not be located in low point of vertical curves or curb flow lines. If no other location is possible, then watertight locking lids must be specified.

PHASE 2 – Permit Application and Sewer Extension Design

Date Completed		Check when completed	Description of Checklist Item
	5.		*Continued from previous page*
		_____	Location of main line, manholes, service stubs, cleanouts, etc., shall be shown in such a manner that the system can be staked for construction.
		_____	Scale of drawings by both scale callout and bar scale shall be shown on the plans – plans shall be either 20, 30, or 40 scale.
		_____	Gravity side sewer stubs shall have a minimum 2% slope.
		_____	Minimum cover over pipe shall be 72” unless otherwise approved by the Engineer. If an exception to the minimum cover is allowed, CL 52 ductile iron pipe may be substituted.
		_____	Manholes are required at the terminus of all sewer mains.
		_____	All permanent easements shall be shown and called out on the plans.
		_____	Developer’s Engineer’s name, stamp, signature and date signed shall be included on each sheet of the plans.
		_____	The anticipated flows (in gallons per minute) from the proposed development shall appear on the title sheet of the plans.
_____	6.		District Review of Plans (District)
_____	7.		Revision and Resubmittal #1- if needed (Developer)
_____			District Review of Plans (District)
_____	8.		Revision and Resubmittal #2 - if needed (Developer)
_____			District Review of Plans (District)
_____	9.		Revision and Resubmittal #3 - if needed (Developer)
_____			District Review of Plans (District)
_____	10.		Prepare Easements if Required (Developer)
_____	11.		District Review of Easement Documents (District)

PHASE 2 – Permit Application and Sewer Extension Design

Date Completed		Description of Checklist Item
_____	12.	Revisions to Easement if Required (Developer)
_____	13.	Plans Approved for Construction - (District provides approval letter)
_____	14.	Submit Developer's Engineer's Estimate of probable costs and Performance Bond (Developer)
		Schedule Pre-Construction Meeting (Developer)
		Date of Meeting: _____
	15.	Submit Material Submittals to the District for review and approval (Developer)

PHASE 3 – Construction

Date Completed		Description of Checklist Item
_____	1.	Construction Begins
_____	2.	Construction Complete (except for paving operation, but includes complete installation of power, gas, telephone, and cable services)
_____	3.	Completion of Air Test for Gravity Sewers and/or Water Pressure Test for Force Mains
		Test #1: Pass_____ Fail_____
		Retest #2: Pass_____ Fail_____
		Retest #3: Pass_____ Fail_____
_____	4.	Video/Mandrel Testing Complete
		Video Test: Pass_____ Fail_____
		Mandrel Test #1: Pass_____ Fail_____
		Mandrel Retest #2: Pass_____ Fail_____
		Mandrel Retest #3 Pass _____ Fail_____

PHASE 4 – Post Construction

Date Completed		Description of Checklist Item
_____	1.	Submit As-built Drawings to the District for Acceptance. The As-builts must be stamped by a Washington State-licensed Professional Engineer or Land Surveyor. (Developer)
_____	2.	Revisions to As-builts if Required (Developer)
_____	3.	Complete Bill of Sale (Developer and District)
_____	4.	Submit Maintenance Bond (Developer) Submit Competed Checklist to District for Records (Developer)
_____	5.	Acceptance Granted by Board of Commissioners (District) 2-Year Warranty begins (Developer)
_____	6.	2-year Warranty assessment of facilities at month 21 following District's acceptance of construction. (Developer/District)
_____	7.	Correction of system deficiencies if necessary (Developer)
_____	8.	End 2-year maintenance bond (Developer)
_____	9.	Project Closeout, Release of Maintenance Bond (District)

Reimbursement Agreement Process (If Applicable)

Date Completed		Description of Checklist Item
_____	1.	Submit Request to District to consider a Reimbursement Agreement concurrent with application to construct extension (Developer)
_____	2.	District Review of Request and written response (District)
_____	3.	If request approved, define reimbursement agreement boundaries (District)
_____	4.	Create reimbursement agreement document (Developer)
_____	5.	District review of reimbursement agreement (District)
_____	6.	Revision and Resubmittal #1- if needed (Developer)
_____	7.	District Review of Resubmittal #1- if needed (District)
_____	8.	Revision and Resubmittal #2 - if needed (Developer)
_____	9.	District Review of Resubmittal #2- if needed (District)
_____	10.	Revision and Resubmittal #3 - if needed (Developer)
_____	11.	District Review of Resubmittal #3- if needed (District)
_____	12.	Reimbursement Agreement recorded on property title. (District)

APPENDIX G – Lift Station Inspection Checklist

LIFT STATION INSPECTION CHECKLIST

Inspectors: _____Date: _____
_____
_____

Name of Lift Station: _____
Location:_____
Address:_____
Assigned Lift Station Number: _____

AMP reading recorded at startup: #1_____ #2_____ #3_____
Comments:_____
_____

Motor Data: HP_____ RPM_____ Phase_____ Cycle_____
Volt_____
Comments:_____
_____

Pump Design in gallons per minute: #1_____ #2_____ #3_____
#1, #2, and #3 _____ TDH _____
Comments:
_____
_____

Pump performance during startup in gallons per minute: #1 _____ #2 _____
#3_____ #1, #2, and #3 _____ TDH _____
Comments:_____
_____

Hour Meter Readings: #1 _____ #2 _____ #3_____
Comments:_____
_____

Pump #1 Running Amps: L1 _____ L2 _____ L3_____
Pump #2 Running Amps: L1 _____ L2 _____ L3 _____
Pump #3 Running Amps: L1 _____ L2 _____ L3 _____

Note: Check that motors are not exceeding their nameplate amperage multiplied by the motor service factor, (i.e., with FLA = 10 and SF = 1.15, the amperage recorded should not exceed 11.5 amps). The motor will operate satisfactorily under the following conditions of voltage and frequency variation, but not necessarily in accordance with the standards established for operation under rated conditions.

- The voltage variation may not exceed 10% above or below rating specified on the motor nameplate.
- The frequency variation may not exceed 5% above or below motor nameplate.
- The sum of the voltage and frequency variations may not exceed 10% above or below motor nameplate rating, provided the frequency variation does not exceed 5%.

Motor Nameplate Amps: #1_____ #2_____ #3_____

Motor Nameplate SF Amps: #1_____ #2_____ #3_____

Voltage Taken @ Terminal Block: L1 _____
L2_____L3_____

	OPERATION ONLY	
	Yes	No
Unusual Noise #1 Pump or Motor:		
Comments:_____	_____	_____
_____		
Unusual Noise #2 Pump or Motor:		
Comments:_____	_____	_____
_____		
Unusual Noise #3 Pump or Motor:		
Comments:_____	_____	_____
_____		
Sealed Bearings:		
Comments:_____	_____	_____
_____		
Pump Alternator Operation:		
Comments:_____	_____	_____
_____		
Control Panel components:		
Pump Run Lights:	_____	_____
Hour Meters:	_____	_____
H.O.A.:	_____	_____
Limit Switches:	_____	_____
Comments:_____		
_____		

	Yes	No
Alarm Functions:		
Power Fail:	_____	_____
Redundant High Float	_____	_____
High Wet Well	_____	_____
Low Wet Well	_____	_____
Redundant Low Float	_____	_____
Pump #1 Fail:		
Pump #2 Fail:	_____	_____
Dry Well Flood:	_____	_____
Smoke and Fire:	_____	_____
Intrusion:	_____	_____
Pump #1 Run:	_____	_____
Pump #2 Run:	_____	_____

Comments:_____
_____

Actual Wet Well Pump down and fill levels:

High Water: _____
Fill Level: _____

Pump Down: _____

Low Level: _____

Wet Well blower Operation: _____ _____

Comments:_____
_____
_____

Wet Well Ladder: _____ _____
Comments:_____

Spare Parts Furnished: _____ _____
Comments:_____

	Yes	No
O & M Manuals (5 copies):	_____	_____
Comments:_____		
_____		
Telemetry Function at District Headquarters:		
Main Power Fail:	_____	_____
Critical High Well		
High Wet Well:	_____	_____
Low Wet Well:	_____	_____
Critical Low Well	_____	_____
Pump #1 Fail:	_____	_____
Pump #2 Fail:	_____	_____
Dry Well Flood: (not applicable for submersible stations)	_____	_____
Smoke and Fire:	_____	_____
Intrusion:	_____	_____
Pump #1 Run:	_____	_____
Pump #2 Run:	_____	_____
Comments:_____		
_____		
_____		
Locks:		
Wet Well:	_____	_____
Electrical:	_____	_____
Fenced Area:	_____	_____
Control Panel:		
Heater Operations	_____	_____
Comments: _____		
_____		
Disconnect Operation:	_____	_____
Comments:_____		
_____		

	Yes	No
District's Auxiliary (Mobile) Generator:		
Plug-in:	_____	_____
Plug-in face plate:	_____	_____
Transfer Switch:	_____	_____
Operation:	_____	_____

Comments:_____
_____

Isolation Valve Operation:		
Dry Well:	_____	_____
Outside (In-line gate valve for force main/pump station isolation located outside wet well downstream of manifold):	_____	_____

Comments:_____

Check Valve Operation:	_____	_____

Comments:_____

Corrosion Resistant (protective coating):

Wet Well:	_____	_____
Force Main Outfall:	_____	_____
Down Stream Manhole:	_____	_____

Comments:_____

Emergency Bypass:

Components:	_____	_____
Operation:	_____	_____

Comments:_____

All Nuts and Bolts in Place:	_____	_____

Comments:_____

All Mechanical Components Installed:	_____	_____

Comments:_____

	Yes	No
Wet Well Piping for Proper Size:	_____	_____
Control Panel Enclosures with Appropriate UL Labels:	_____	_____

Comments:_____

Wiring Schematics for Correlation:	_____	_____

Comments:_____
_____

Wire Gauge:	_____	_____

Comments:_____
_____

Electrical Conduit for Defects:	_____	_____

Comments:_____
_____
_____

Terminal Block:	_____	_____

Comments:_____
_____
_____

Apparent Proper Sized Circuit Breakers & Fuses: (to be confirmed by the County or State Electrical Inspector)	_____	_____

Comments:_____
_____
_____

Apparent Electrical Control Devices Sized for Motor Horse Power: (to be confirmed by the County or State Electrical Inspector)	_____	_____

Comments:_____
_____
_____

	Yes	No
Overload Devices, Trip Test & Manual Reset:	_____	_____

Comments:_____
_____
_____

All Wires Connected:	_____	_____

Comments:_____
_____
_____

Proper and Accepted Electrical As-Built Records:	_____	_____
Air Release Valve on Discharge:	_____	_____

Comments:_____

Warranty:	_____	_____

Comments:_____

Debris in Wet Well:	_____	_____

Comments:_____
_____
_____

Infiltration Points:	_____	_____

Comments:_____
_____
_____

Cleanliness:	_____	_____

Comments:_____
_____
_____

Proper Pump Rotation (shaft moves in direction of arrows):	_____	_____

Comments:_____

PSI Gauges Prime Chamber:	_____	_____

Comments:_____

	Yes	No
Operation of Latch:	_____	_____
Comments:_____		
Operation of Entrance Cover:	_____	_____
Comments:_____		
Operations of Cover Safety Latch: (Provide Padlock with District Key)	_____	_____
Comments:_____		
Hose bib, RPBA and water meter:	_____	_____
Comments:_____		

APPENDIX H – Sample Title Block

CALL TWO WORKING DAYS
BEFORE YOU DIG
1-800-424-5555

DESIGNED _____
DRAWN _____
CHECKED _____

SYM	REVISION	DATE	BY	APP'D

Skyway
6723 SOUTH 124TH STREET
SEATTLE, WA 98178
(206) 772-7343
FAX (206) 772-5860

APPROVED FOR CONSTRUCTION

_____ _____
SKYWAY WATER & SEWER DISTRICT DATE

PLAN APPROVAL EXPIRES 1 YEAR FROM DATE SIGNED

DATE

SCALE:

DRAWING NAME

JOB NUMBER
00327.00
DWG NO.
SHEET_____ OF _____

APPENDIX I – General, Water, and Sewer Notes

- **General Notes**
- **Water Notes**
- **Sewer Notes**
- **Gravity Sewer Notes**
- **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.

WATER NOTES

1. The Developer/Contractor shall be responsible for the field staking of all water 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 three full working days in advance of commencing work on a water main 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 water pipe any time that work is delayed or stopped.
6. The minimum cover for the water main 12 inches in diameter or smaller shall be 36 inches to the top of the pipe. The minimum cover for water mains over 12 inches in diameter shall be 48 inches to the top of the pipe. The maximum depth shall not be greater than 60 inches to the top of the pipe. In the vicinity of utility conflicts, the minimum depth of cover may be reduced to 30 inches. Otherwise, water mains shall be lowered to clear. Where water mains cross beneath sanitary sewer, the length of the water main shall be centered at the point of crossing so that the joints will be equidistant and as far as possible from the sewer line.
7. 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.
8. A minimum of 1-foot vertical separation shall be maintained between all utilities with the exception of sanitary sewer 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.
9. Water main piping conform to AWWA C151 Class 52 ductile iron pipe, with a cement mortar lining conforming to AWWA C104, unless otherwise specified, and shall conform to the Standard Specifications.
10. Water service piping shall be copper 'Type K' or schedule 40 brass.
11. Fire Hydrants shall be Mueller Centurion or Waterous Pacer with all ductile iron body.
12. Bedding of the pipelines and compaction of backfill material shall be required in accordance with the Standard Specifications.

13. 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.
14. Plastic sheeting shall be used as a bond breaker between concrete blocking and pipe/fittings.
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. Water 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 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. 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. The Skyway Water & Sewer District shall be the sole operator of existing valves.
19. Cut-ins shall be directly supervised by an authorized representative of the District.
20. Existing water facilities being abandoned, and/or abandoned crossing pipes shall be made watertight by plugging/capping prior to backfilling. Pipe shall be plugged/capped at their inlets/outlets with proper fitting mechanical plugs/caps, prior to backfilling.
21. Water settling of trenches shall not be allowed.
22. 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.
23. 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.
24. Gates valves shall be resilient wedge non-rising stem (NRS) with two internal O-ring stem seals and all ductile iron bodies, and conform to AWWA C515. Gate valves shall be Mueller, M & H, or American Flow Control Series 2500.
25. Valve marker posts shall be installed for valves located outside paved surfaces.

26. Valve boxes shall be Rich #940 “Seattle” style with lug type cover. Valve box frame and cover shall be tested for accuracy of fit. Castings and extensions shall be hot-dipped in asphaltic varnish, Royston Roskote #612XM or approved equal.

27. An operating nut extension shall be installed when the ground surface is more than 30 inches above the valve operating nut. The operating nut extension shall extend into the top section of the standard valve box and shall clear the bottom of the lid by a maximum of six inches. Extension pieces, when used, shall conform to minimum thickness requirements and shall fit into the top section and over the bottom section. The extension shall be securely fastened to the valve assembly using a set screw or pin prior to backfilling. A plastic foam ring shall be installed between the bottom base section and the gate valve.

28. Service connections on ductile iron mains or for any water service shall be installed with Mueller, Rockwell, Romac, or approved equal pipe saddles. Direct taps shall not be allowed. Saddle taps will be accepted. The minimum acceptable tap size shall be ¾” minimum.

29. The District shall provide all ¾” and 1” service taps on existing District water mains. The Developer/Contractor shall be responsible for service taps greater than 1” off of existing District water mains, and for all service taps off of new Developer-installed water mains. The Contractor shall coordinate meter locations with the District’s authorized representative.

30. Tapping sleeves for asbestos cement pipe shall be Smith/Blair #662720, Romac #SST, or approved equivalent. Tapping sleeves for ductile and cast iron shall be JCM 412, APAC 532, or approved equivalent. Tapping sleeves for PVC pipe shall be JCM 442, no equivalents considered. All live taps shall be directly observed by an authorized representative of the District.

31. All couplings shall be Romac 501, or equivalent.

32. The Contractor shall only shut off water service to existing water customers between the hours of 9 AM to 3 PM, Monday through Friday unless arrangements are made with the District to do otherwise. Water shall not be cut off on weekends or on District-observed holidays. The Contractor shall provide the District a minimum of four working days notice prior to requiring a water main shut down.

33. No water connections shall be made until the new piping has been flushed, disinfected, and successfully pressure and bacteria tested. A District representative shall be present at the time of the connection.

34. The Contractor shall obtain a double check valve assembly and associated water meter from the District for use in obtaining water to fill newly constructed water mains for flushing and bacteriological testing. The Developer shall be liable for payment of any damages that occur to the backflow/meter assembly while in the Contractor’s possession. The Contractor will be allowed to connect to a fire hydrant (to remain in full open position) with this device as required to perform the necessary operation.

35. Disinfection wastewater shall be discharged into the sanitary sewer system or neutralized completely (zero chlorine residual) and safely discharged by other means. At no time shall chlorinated water from a new main be flushed into a fresh water body or its tributary area. This is to include lakes, rivers, streams, drainage ways, storm drainage systems, and any and all other areas tributary to where fish or other natural water life can be expected. The Contractor shall follow erosion and sediment control best management practices (BMP's) when discharging onto the ground.
36. Hydrostatic and bacteria tests are required on all new water main installations in accordance with the Standard Specifications. Pressure and bacteriological tests shall be conducted by the Contractor in the presence of the District and/or their representative. The Contractor shall provide plugs and/or temporary blow-off assemblies for purity testing and purity acceptance prior to tie-in. Pressure and bacteria testing shall take place following completion of all underground utility construction and the construction of roadway subgrade. Bacteriological test samples shall be taken and delivered to the testing lab by the District.
37. After installation, backflow devices shall be tested and certified by a Washington State-certified Backflow Assembly Tester. Test results shall be provided to Skyway Water & Sewer.
38. Final acceptance of water facility installation will not be made until tests and inspections are complete and proven satisfactory.

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.

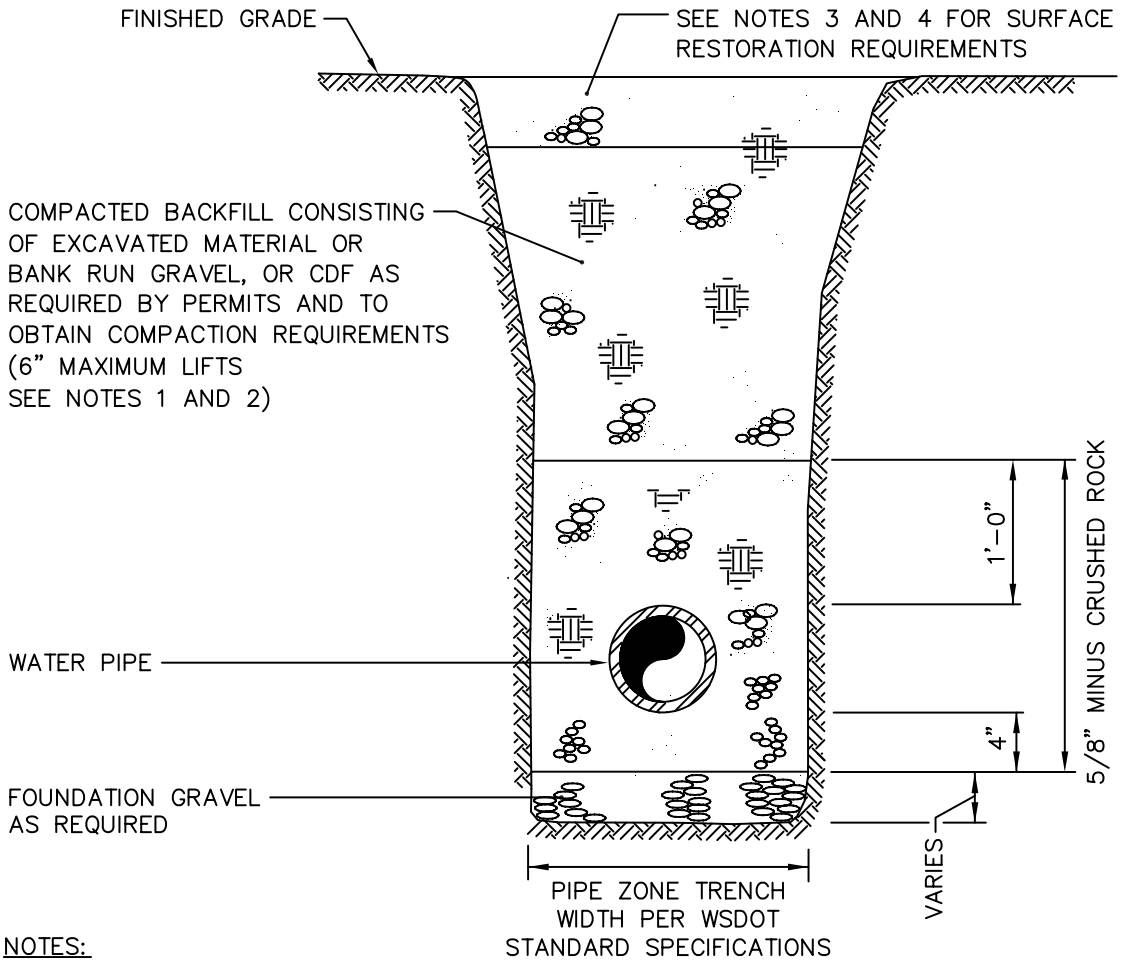
PRESSURE SEWER NOTES

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 J – Water Standard Details

WA01	Trench Section for Water Pipe
WA02	3/4” & 1” Water Service Stubs
WA03	1-1/2” and 2” Water Service Stubs
WA04	3” and Larger Meter Installation
WA05	Fire Hydrant
WA06	2” Air and Vacuum Assembly
WA07	2” Blow-off Assembly
WA08	4”, 6” and 8” Blow-off Assembly
WA09	Valve Box & Valve Operating Nut Extension
WA10	Valve Marker Post Detail
WA11	Irrigation Service
WA12	Pipe Casing
WA21	Standard Blocking Detail
WA22	Thrust Loads for Standard Blocking
WA23	Vertical Thrust Blocking
WA24	Live Tap
WA25	Cut-in Tee Using Single Valve
WA26	Cut-in Tee Using Two Valves
WA27	Cut-in Tee Using Three Valves
WA28	Temporary Flushing/Testing Setup for Connection to Existing Water Mains
WA31A	Pressure Reducing Station
WA31B	Pressure Reducing Station Materials List
WA32	Sump Pump Installation
WA41	Double Check Valve Assembly for 2” or Smaller
WA42	Double Check Valve Assembly for 3” and Larger
WA44	Double Detector Check and Vault
WA45	Double Detector Check and Vault w/FDC
WA46	Double Detector Check Inside Building w/FDC (4” and Larger)
WA47	Reduced Pressure Backflow Assembly for 2” & Smaller
WA48	Reduced Pressure Backflow Assembly for 3” & Greater
WA49	Reduced Pressure Backflow Assembly Installation 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.

N.T.S.

TRENCH SECTION FOR WATER PIPE

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA01
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005

SERVICE LINE

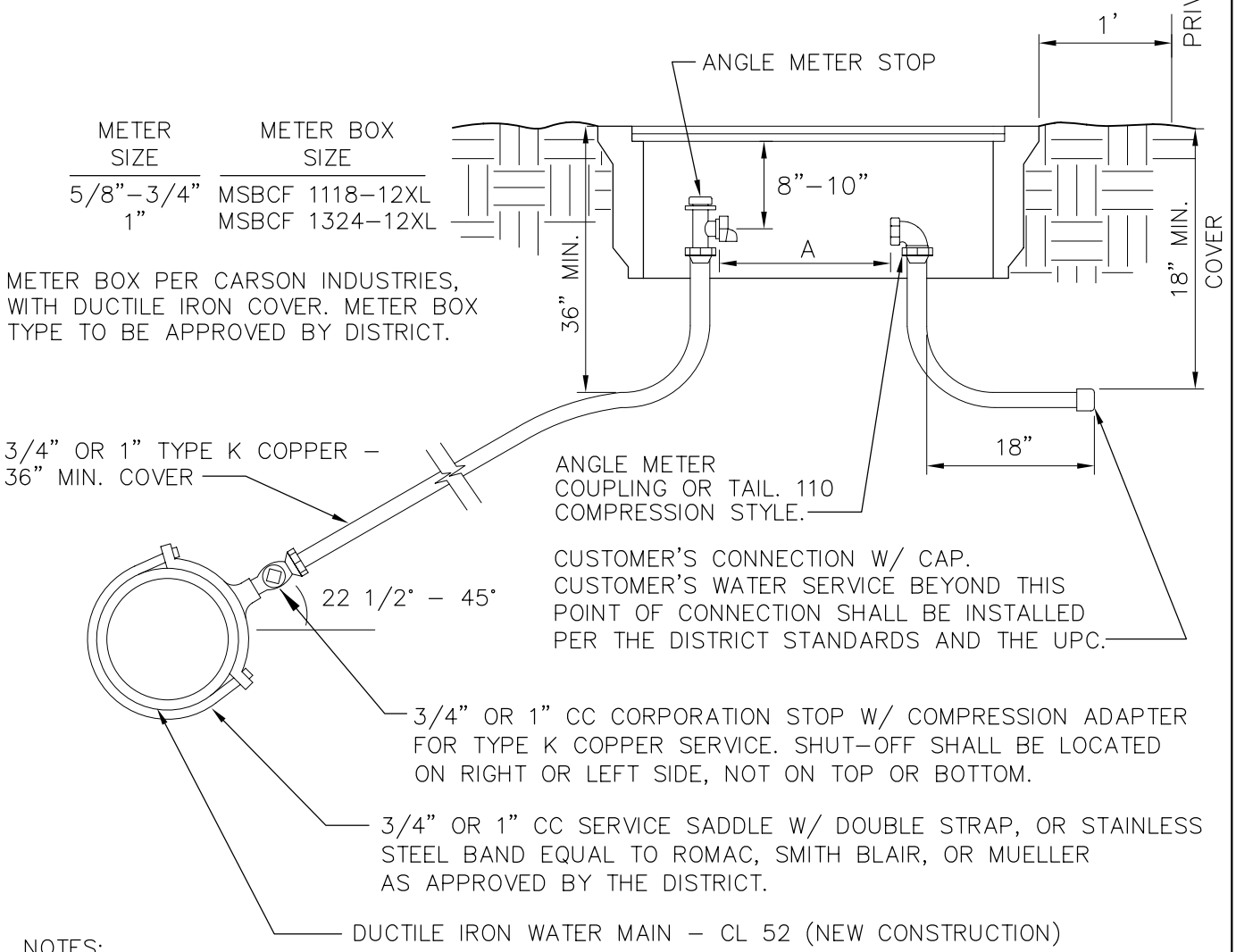
- ANGLE METER STOP SHALL BE LOCKABLE 110 COMPRESSION STYLE
- INSTALL TYPE K COPPER AND MISC. BRASS FITTINGS FOR CONNECTION TO CUSTOMER'S LINE
- ANGLE METER STOP AND COUPLING SHALL BE SET LEVEL AND CENTERED IN THE METER BOX. (SETTER NOT SHOWN.)

METER SIZE	A*
5/8"	7-3/4"
3/4"	9-1/4"
1"	11"

* DIMENSIONS INCLUDE GASKET WIDTHS.

METER SIZE	METER BOX SIZE
5/8"-3/4"	MSBCF 1118-12XL
1"	MSBCF 1324-12XL

METER BOX PER CARSON INDUSTRIES, WITH DUCTILE IRON COVER. METER BOX TYPE TO BE APPROVED BY DISTRICT.



NOTES:

1. INSTALL PVC SPACER PIPE IN METER SETTER TO SECURE ALIGNMENT DURING CONSTRUCTION.
2. METER BOX SHALL BE INSTALLED FLUSH W/FINAL GRADE AND MUST BE SIZED TO ALLOW FOR MIN. CLEARANCE REQUIREMENTS.
3. WATER METER SHALL BE CENTERED IN METER BOX AND BE VISIBLE TO METER READER.
4. WATER METER TO BE SUPPLIED BY THE DEVELOPER FOR DEVELOPER EXTENSION PROJECTS AND BY SKYWAY WATER & SEWER DISTRICT FOR NON-DEVELOPER EXTENSION PROJECTS. METERS SHALL BE PRECISION MODEL PMM OR AS REQUIRED BY THE DISTRICT. METER TO READ IN CUBIC FEET.
5. ALL FITTINGS SHALL BE BY MUELLER OR FORD QUICK JOINT.

N.T.S.

3/4" & 1" WATER SERVICE STUBS

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

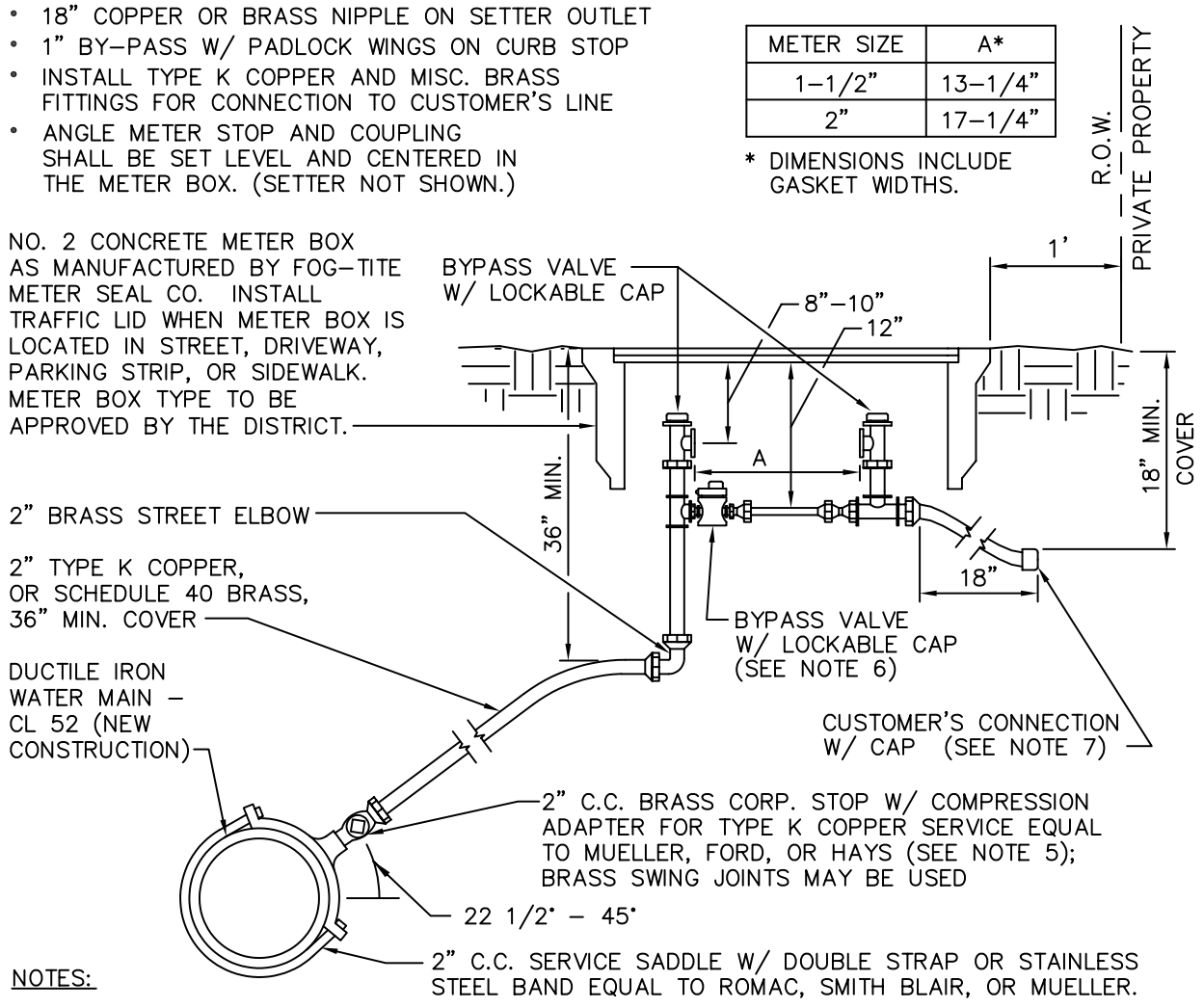
DETAIL NUMBER: WA02

15" COPPER SETTER EQUAL TO MUELLER, FORD, OR HAYS, EQUIPPED AS FOLLOWS:

- PADLOCK WINGS ON KEY VALVE
- IRON PIPE CONNECTIONS ON SETTER INLET AND OUTLET
- COMPRESSION ADAPTER ON SETTER INLET
- 18" COPPER OR BRASS NIPPLE ON SETTER OUTLET
- 1" BY-PASS W/ PADLOCK WINGS ON CURB STOP
- INSTALL TYPE K COPPER AND MISC. BRASS FITTINGS FOR CONNECTION TO CUSTOMER'S LINE
- ANGLE METER STOP AND COUPLING SHALL BE SET LEVEL AND CENTERED IN THE METER BOX. (SETTER NOT SHOWN.)

METER SIZE	A*
1-1/2"	13-1/4"
2"	17-1/4"

* DIMENSIONS INCLUDE GASKET WIDTHS.



NOTES:

1. INSTALL PVC SPACER PIPE IN METER SETTER TO SECURE ALIGNMENT DURING CONSTRUCTION.
2. METER BOX SHALL BE INSTALLED FLUSH W/ FINAL GRADE AND MUST BE SIZED TO ALLOW FOR MIN. CLEARANCE REQUIREMENTS.
3. WATER METER TO BE SUPPLIED BY THE DEVELOPER FOR DEVELOPER EXTENSION PROJECTS AND BY SKYWAY WATER & SEWER DISTRICT FOR NON-DEVELOPER EXTENSION PROJECTS. METERS SHALL BE PRECISION MODEL PMM OR AS REQUIRED BY THE DISTRICT. METER TO READ IN CUBIC FEET.
4. ALL FITTINGS SHALL BE COPPER OR BRASS.
5. SHUT-OFF SHALL BE LOCATED ON RIGHT OR LEFT SIDE, NOT ON TOP OR BOTTOM.
6. CONTRACTOR SHALL SUPPLY LOCK FOR BYPASS VALVE KEYED TO SKYWAY LOCKS.
7. CUSTOMER'S WATER SERVICE BEYOND THIS POINT OF CONNECTION SHALL BE INSTALLED PER THE DISTRICT'S STANDARDS AND THE UPC.

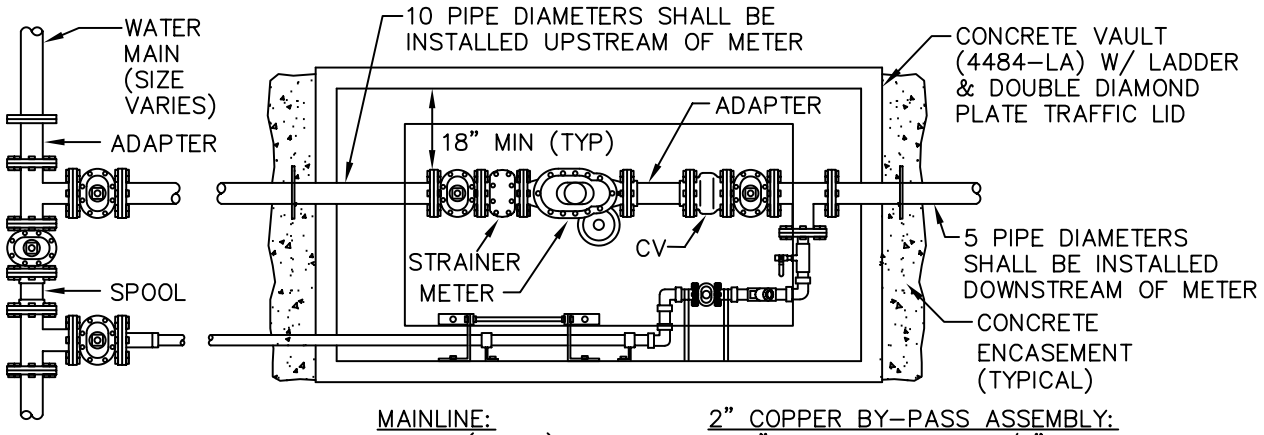
N.T.S.

1 1/2" AND 2" WATER SERVICE STUBS

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: WA03



3" (OR GREATER) SERVICE LINE:

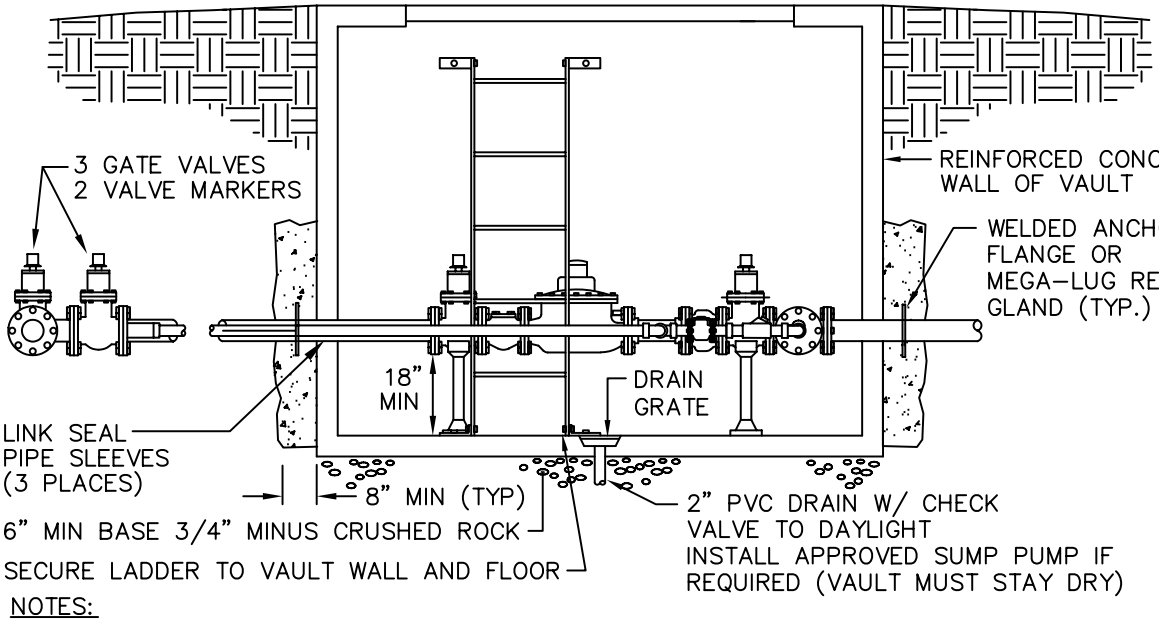
- 2-3" WALL SPOOLS (FLxPE)
- 1-3" TEE (FL)
- 3-3" GATE VALVES (FL)
- 1-3" BRONZE BASKET STRAINER (FL)
- 1-3" COMPOUND METER (FL) PER SKYWAY REQUIREMENTS
- 2-3" X 12" SPOOL (FLxPE)
- 1-3" SILENT CHECK VALVE (GLOBE STYLE)(FL)
- 2-ADJUSTABLE PIPE SUPPORTS (PIPE TO BE SUPPORTED EVERY 3' MINIMUM)
- 1-3" GATE VALVE (FLxMJ)
- 1-3" ADAPTER SHORT BODY (FLxMJ) W/ MEGALUG

MAINLINE:

- 1-TEE (MJxFL)
- 1-SPOOL W/2 MEGALUGS
- 1-TEE (FL)
- 1-GATE VALVE (FLxMJ)
- 1-ADAPTER (FLxMJ)

2" COPPER BY-PASS ASSEMBLY:

- 2-3" BLIND FLANGES W/2" TAP
- 2" HARD COPPER PIPE (LENGTH TBD)
- 1-2" ADAPTER (IP X COMP)(BRASS)
- 3-2" 90° BEND (IP)(BRASS)
- 1-2" METER - SEE STANDARD DETAIL WA03
- 1-2" CHECK VALVE (IP)(BRASS)
- 1-2" X 3/4" TEE (IP)(BRASS)
- 1-3/4" BALL VALVE (IP)(BRASS)
- BALL VALVE TO BE INSTALLED DOWNSTREAM OF CHECK VALVE
- MISC. 2" BRASS NIPPLES (LENGTH AS REQ.)
- MISC. 2" ADAPTERS (BRASS)
- SECURE COPPER PIPE TO VAULT WALL WITH APPROVED BRACKETS
- 2-STAINLESS STEEL BANDS



NOTES:

1. METER SUPPLIED BY THE DEVELOPER PER SKYWAY REQUIREMENTS.
2. STANDARD MECHANICAL JOINT FOLLOWERS SHALL BE USED WHERE MEGALUGS ARE NOT SPECIFIED.
3. 3" AND LARGER METER ASSEMBLIES SHALL BE CONFIGURED AS ABOVE.
4. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS RESULTING FROM THE FITTING SCHEDULE TO ENSURE THE APPROPRIATE SIZING OF THE SPECIFIED VAULT.

N.T.S.

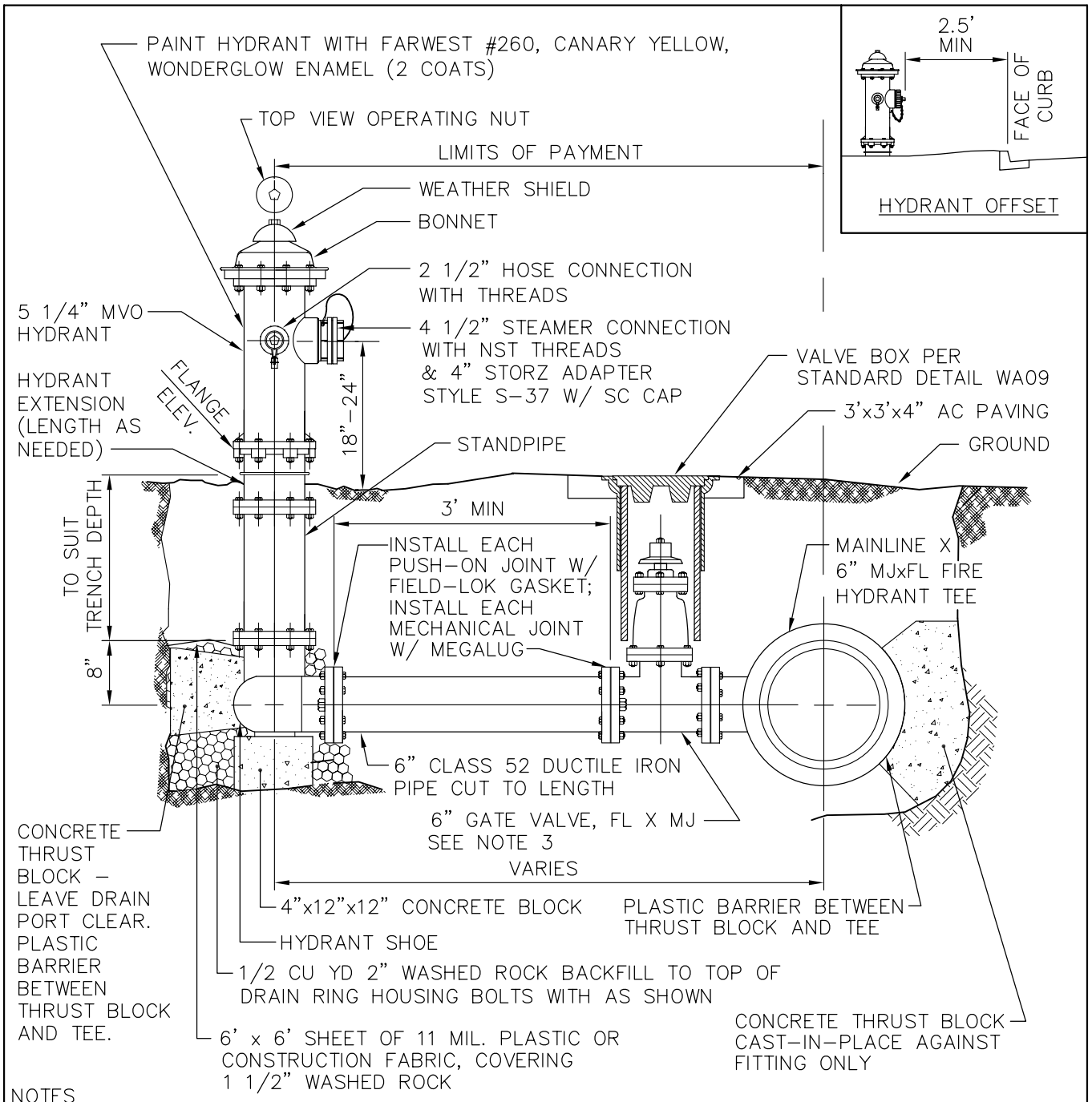
3" AND LARGER METER INSTALLATION

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: WA04



NOTES

1. A MINIMUM THREE FOOT RADIUS UNOBSTRUCTED WORKING AREA SHALL BE PROVIDED AROUND ALL HYDRANTS.
2. HYDRANT SHALL BE MUELLER CENTURION OR WATEROUS PACER W/ ALL DUCTILE IRON BODY.
3. GATE VALVES SHALL BE RESILIENT WEDGE NRS WITH O-RING SEALS. VALVE ENDS SHALL BE MECHANICAL JOINT BY ANSI FLANGES. VALVES SHALL BE ALL DUCTILE IRON AND CONFORM TO AWWA C515. VALVES SHALL BE MUELLER, M&H, OR AMERICAN FLOW CONTROL SERIES 2500.
4. A FLORESCENT ORANGE BAG MUST COVER AND BE SECURED TO THE FIRE HYDRANT UNTIL APPROVED FOR USE BY THE DISTRICT.
5. IF HYDRANT IS IN RIGHT-OF-WAY, INSTALL BLUE REFLECTIVE PAVEMENT MARKER, TYPE 88 AB STIMSONITE TWO-WAY BLUE.
6. MAXIMUM LENGTH OF FIRE HYDRANT PIPING SHALL BE 40 FEET.

N.T.S.

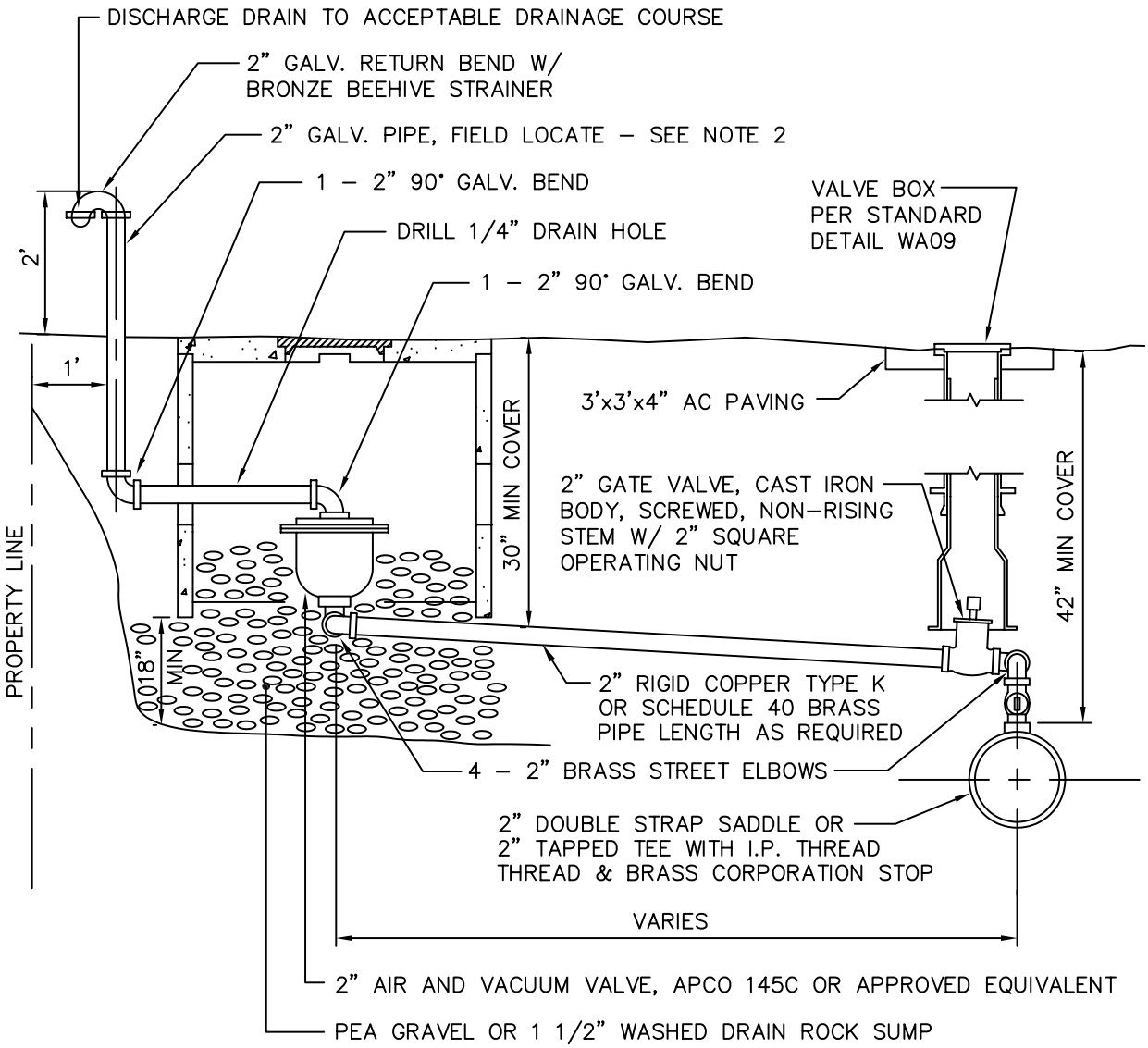
FIRE HYDRANT

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: JANUARY 2009

DETAIL NUMBER: WA05



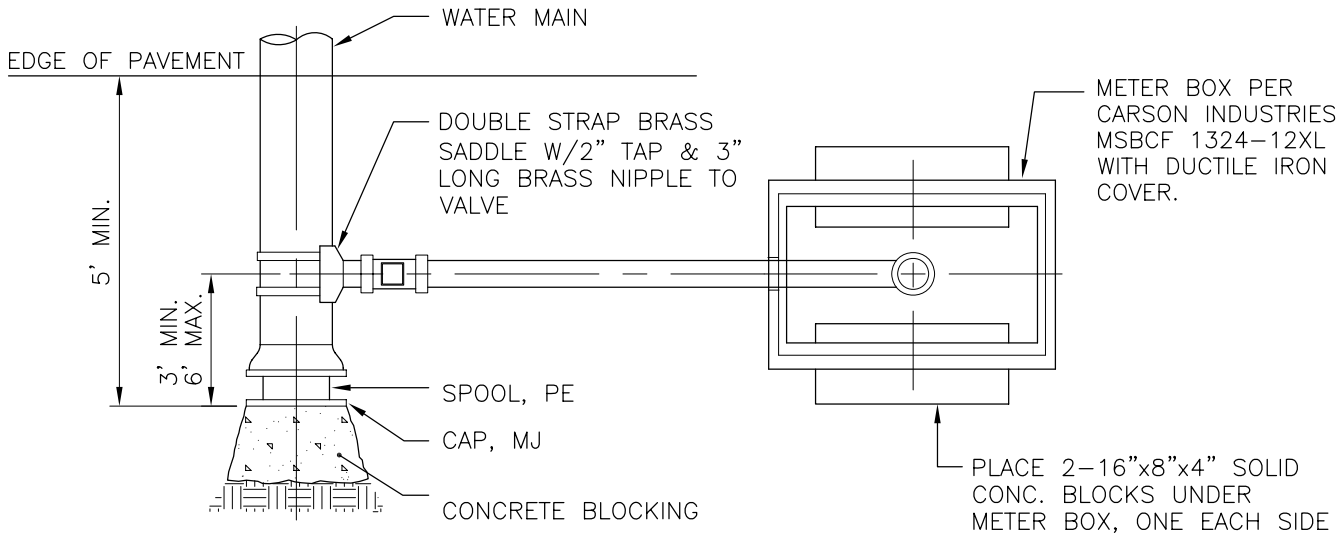
NOTES:

1. ALL PIPE AND FITTINGS FROM THE MAIN TO THE AIR AND VACUUM VALVE SHALL BE BRASS W/ I.P. THREADS OR RIGID COPPER TYPE K W/ COMPRESSION FITTINGS.
2. PAINT RISER WITH YELLOW #3472 AS MANUFACTURED BY FARWEST PAINT MFG. CO. OR SAFETY YELLOW MARATHON #1063 BY PARKER PAINT CO.
3. AIR AND VACUUM VALVE ASSEMBLY MUST BE INSTALLED AT HIGHEST POINT IN LINE. IF HIGH POINT FALLS IN LOCATION WHERE ASSEMBLY CANNOT BE INSTALLED, PROVIDE ADDITIONAL DEPTH OF LINE TO CREATE HIGH POINT AT A LOCATION WHERE ASSEMBLY CAN BE INSTALLED.
4. STENCIL VALVE LOCATION AND DISTANCE NEATLY ONTO RISER W/ 2" NUMERALS USING WHITE ENAMEL PAINT.
5. USE FOG–TITE METER SEAL CO. METER BOX SIZE NO. 2 WITH 3/8" STEEL DIAMOND PLATE TRAFFIC COVER OR APPROVED EQUIVALENT.

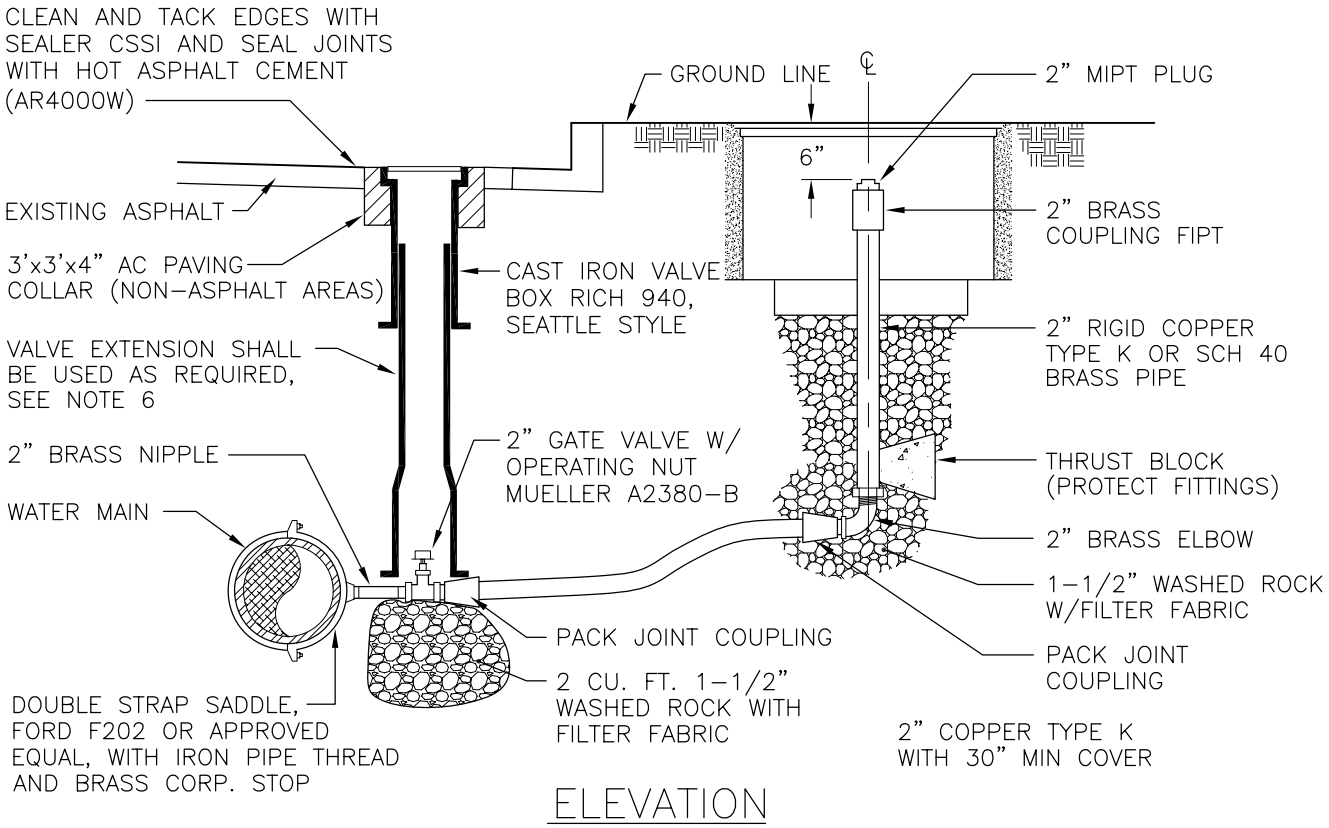
N.T.S.

2" AIR AND VACUUM ASSEMBLY

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA06
	SKYWAY WATER & SEWER DISTRICT — REVISED DATE: FEBRUARY 2005	



PLAN



ELEVATION

NOTES:

1. THIS BLOW-OFF SHALL BE FURNISHED WITH A 2" BRASS FIP INLET, A NON-TURNING OPERATING ROD, SHALL OPEN TO THE DESIGN, AND BE SERVICEABLE FROM ABOVE GRADE WITH NO DIGGING.
2. FOR A 1-1/2" WATER SERVICE, A 2" GATE VALVE SHALL BE USED AND INSERT BUSHING SHALL BE USED TO REDUCE THE 2" OPENING DOWN TO 1-1/2".
3. VALVE MARKER POST PER STANDARD DETAIL WA10.
4. BLOW-OFF ASSEMBLIES SHALL BE INSTALLED AT LOW POINTS IN THE MAIN AND AT DEAD ENDS (AS SHOWN ABOVE).
5. THE CONTRACTOR MAY LOCATE THE VALVE IN THE BOX WITH THE BLOW-OFF. THE CONTRACTOR SHALL FIRST PROPOSE AN ALTERNATE BOX AND SUBMIT TO THE DISTRICT FOR APPROVAL.

N.T.S.

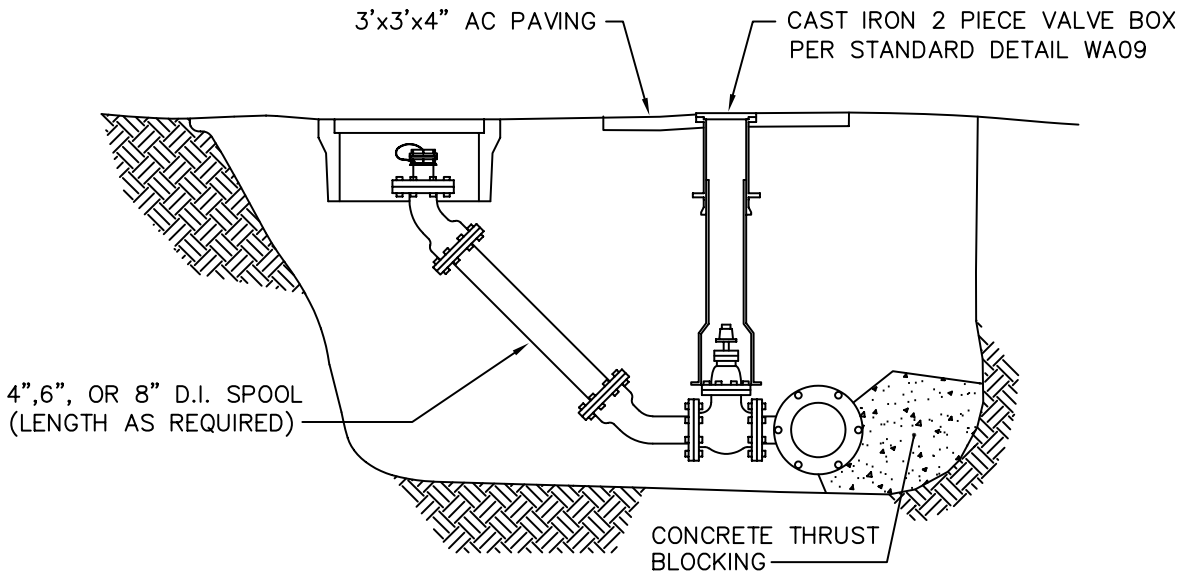
2" BLOW-OFF ASSEMBLY

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

DETAIL NUMBER: WA07



4" BLOW–OFF ASSEMBLY

INSTALL:
1 – MAIN SIZE X 4" TEE (MJxFL)
1 – MAIN SIZE PLUG (MJ)
1 – 4" GATE VALVE (FLxMJ)
1 – 4" 45° BEND (PExMJ)
1 – 4" 45° BEND (MJxFL)
1 – 4" x 4" TAPPED BLIND FLANGE
3 – 4" MEGALUG GLANDS
1 – 4" STORTZ ADAPTER
1 – FOGTITE #3 METER BOX W/ TRAFFIC LID
1 – VALVE MARKER PER STANDARD DETAIL WA10

6" BLOW–OFF ASSEMBLY

INSTALL:
1 – MAIN SIZE X 6" TEE (MJxFL)
1 – MAIN SIZE PLUG (MJ)
1 – 6" GATE VALVE (FLxMJ)
1 – 6" 45° BEND (PExMJ)
1 – 6" 45° BEND (MJxFL)
1 – 6" x 4" TAPPED BLIND FLANGE
3 – 6" MEGALUG GLANDS
1 – 4" STORTZ ADAPTER
1 – FOGTITE #3 METER BOX W/ TRAFFIC LID
1 – VALVE MARKER PER STANDARD DETAIL WA10

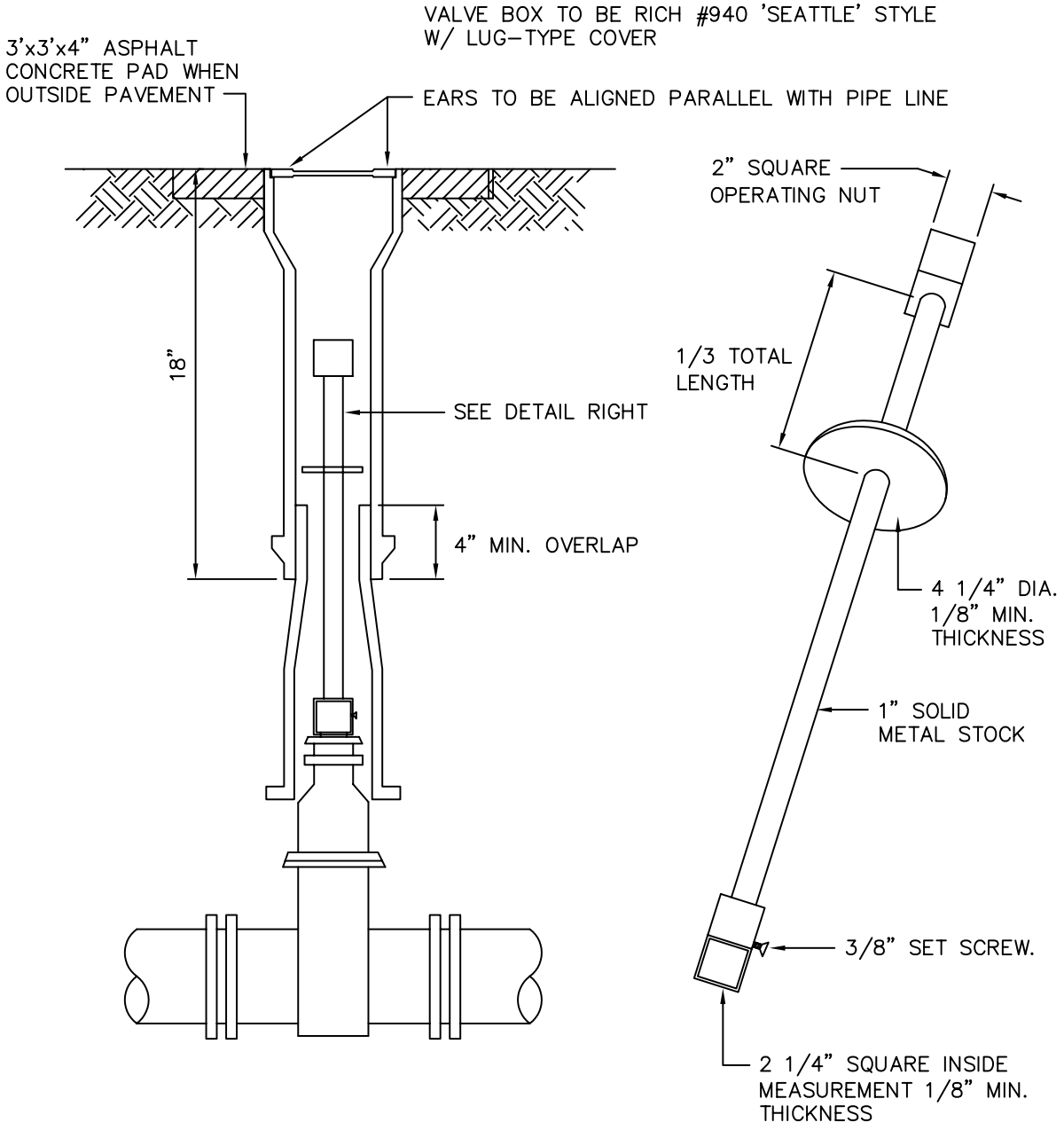
8" BLOW–OFF ASSEMBLY

INSTALL:
1 – MAIN SIZE X 8" TEE (MJxFL)
1 – MAIN SIZE PLUG (MJ)
1 – 8" GATE VALVE (FLxMJ)
1 – 8" 45° BEND (PExMJ)
1 – 8" 45° BEND (MJxFL)
1 – 8" x 4" TAPPED BLIND FLANGE
3 – 8" MEGALUG GLANDS
1 – 4" STORTZ ADAPTER
1 – FOGTITE #3 METER BOX W/ TRAFFIC LID
1 – VALVE MARKER PER STANDARD DETAIL WA10

N.T.S.

4", 6", AND 8" BLOW–OFF ASSEMBLY

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA08
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



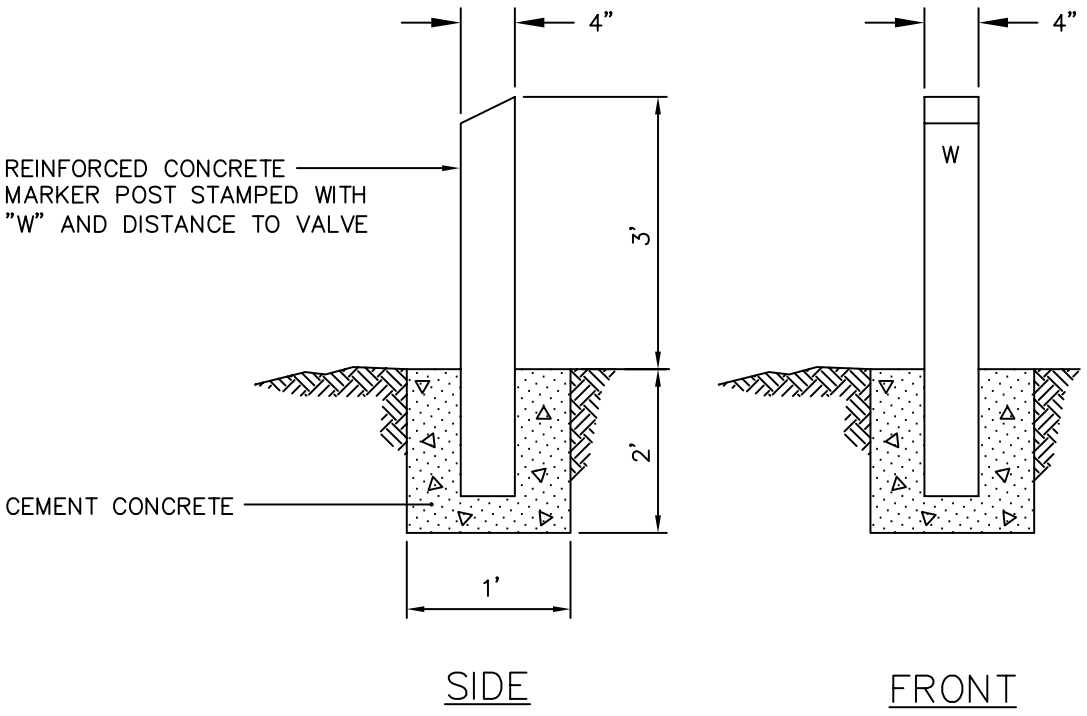
NOTES:

1. EXTENSIONS ARE REQUIRED WHEN THE VALVE NUT IS MORE THAN 4 FEET BELOW FINISHED GRADE.
2. ONLY ONE EXTENSION, MINIMUM OF 2 FEET LONG, TO BE USED PER VALVE.
3. MAXIMUM DISTANCE BETWEEN OPERATING NUT OF EXTENSION AND FINISH GRADE TO BE 2 FEET.
4. ALL EXTENSIONS ARE TO BE MADE OF STEEL AND PAINTED WITH TWO COATS OF ENAMEL PAINT.
5. VALVE BOXES SHALL BE TWO–PIECE, ADJUSTABLE CAST IRON WITH EXTENSION PIECES (IF NECESSARY). THE WORD "WATER" SHALL BE CAST IN RELIEF IN THE TOP.
6. SET SCREW SHALL BE TIGHTENED PRIOR TO BACKFILLING.

N.T.S.

VALVE BOX & VALVE OPERATING NUT EXTENSION

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA09
	SKYWAY WATER & SEWER DISTRICT — REVISED DATE: FEBRUARY 2005	



NOTES:

1. PRECAST REINFORCED POST TO BE PAINTED WITH ONE PRIME COAT, AND TWO COATS OF YELLOW #3472 AS MANUFACTURED BY FARWEST PAINT MFG. CO. OR SAFETY YELLOW MARATHON #1063 BY PARKER PAINT CO.

2. VALVE MARKER POST SHALL BE REQUIRED WHENEVER THE WATER VALVE IS LOCATED IN AN UNPAVED AREA.

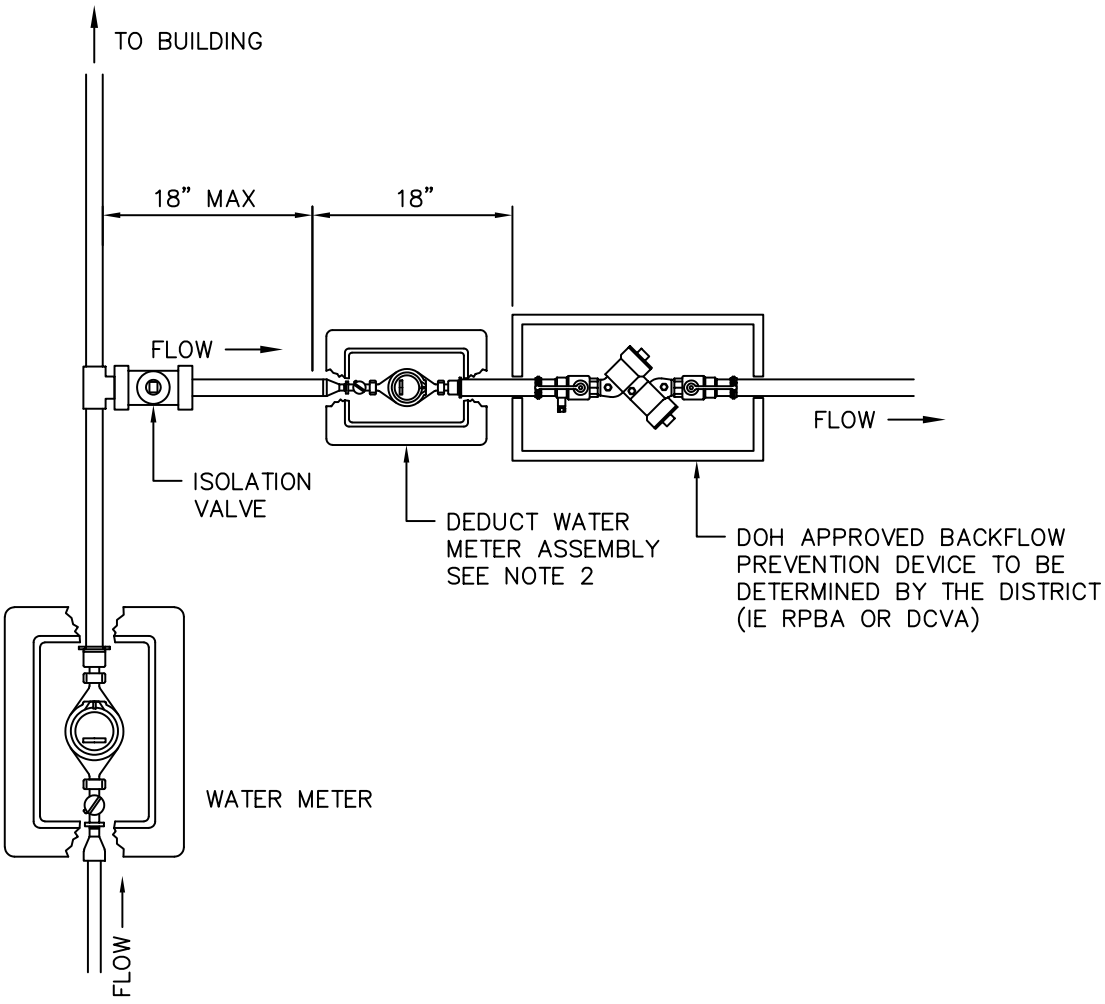
3. THE POST WILL ALSO BE REQUIRED FOR BLOW-OFF AND AIR-VAC ASSEMBLIES.

4. LOCATION OF VALVE MARKER POSTS SHALL BE OFFSET AT RIGHT ANGLES WHENEVER POSSIBLE TO EACH LINE VALVE.

N.T.S.

VALVE MARKER POST DETAIL

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA10
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



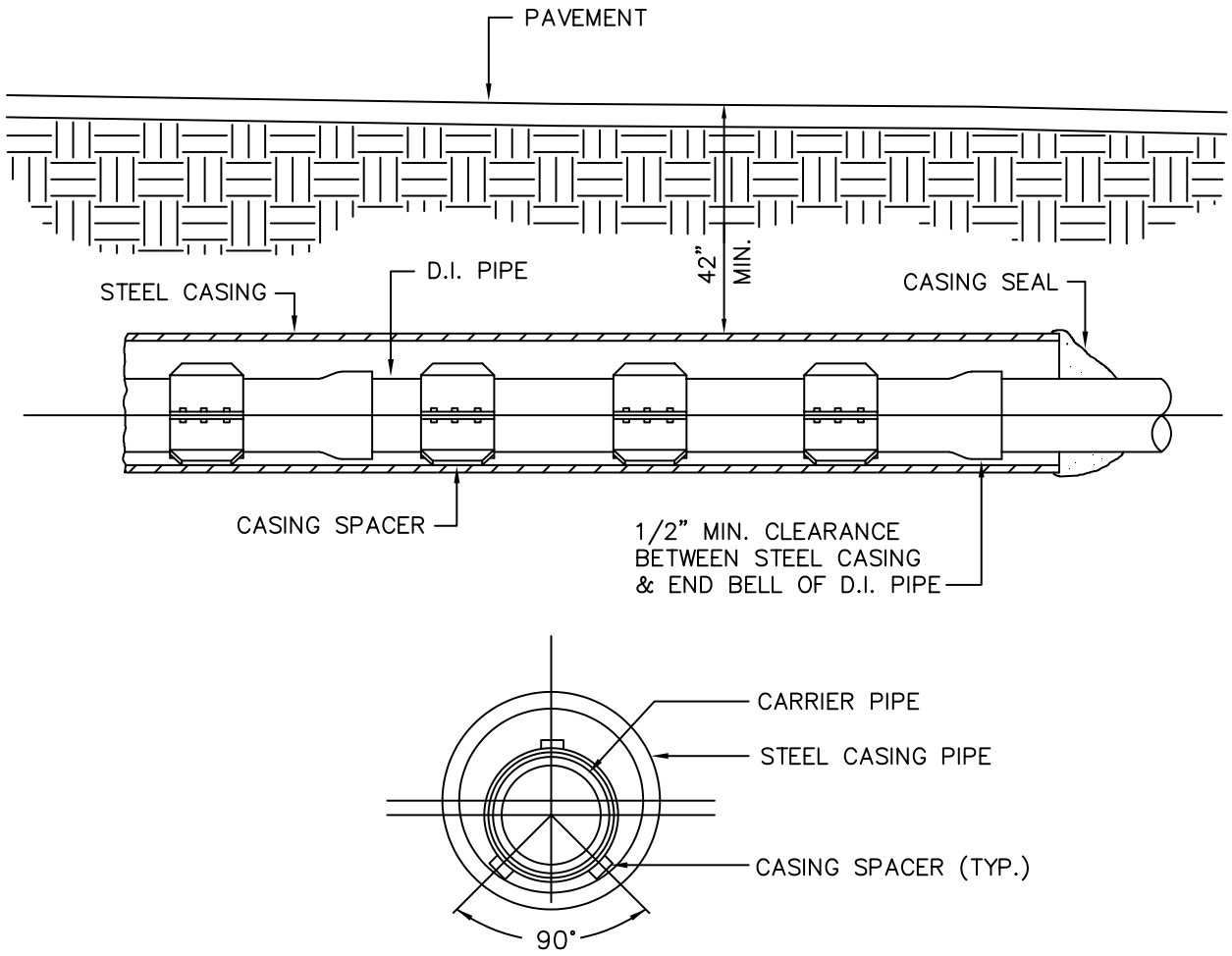
NOTES:

1. THIS CONFIGURATION IS REQUIRED IF THE IRRIGATION SYSTEM DOES NOT HAVE IT'S OWN SEPARATE WATER METER.
2. COMMERCIAL ACCOUNTS SHALL INSTALL A DEDUCT WATER METER. DEDUCT METERS ARE NOT REQUIRED FOR RESIDENTIAL SERVICES.

N.T.S.

IRRIGATION SERVICE WITH PIT BOX

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA11
	SKYWAY WATER & SEWER DISTRICT — REVISED DATE: FEBRUARY 2005	



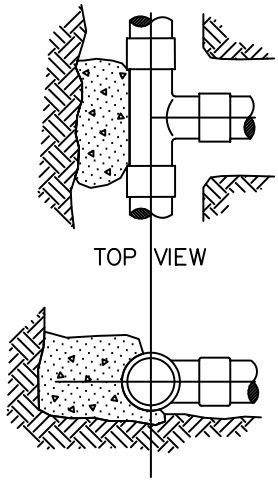
NOTES:

1. CARRIER PIPE WITHIN CASING SHALL BE INSTALLED WITH RESTRAINED JOINTS.
2. CASING SPACER SHALL BE PRESSURE TREATED TIMBER SKIDS FASTENED TO PIPE W/ STAINLESS STEEL STRAPS, OR OTHER METHOD APPROVED BY THE DISTRICT.
3. STAINLESS STEEL STRAPS SHALL SECURELY BIND CASING SPACER IN SLOT PROVIDED.
4. CASING SIZE AND MINIMUM THICKNESS OF CASING SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROPOSE CASING THICKNESS AND SPACER SPECIFICATION FOR APPROVAL PRIOR TO CONSTRUCTION.
5. CASING SEAL BRICK IN AND MORTAR FINISH.
6. FOLLOWING SUCCESSFUL TESTING, PLUG ENDS OF CASING AND PRESSURE FILL WITH CDF, NON-SHRINK GROUT, OR SAND. FILL ALL VOID SPACE BETWEEN OUTER WALL OF PIPE AND INNER WALL OF CASING.

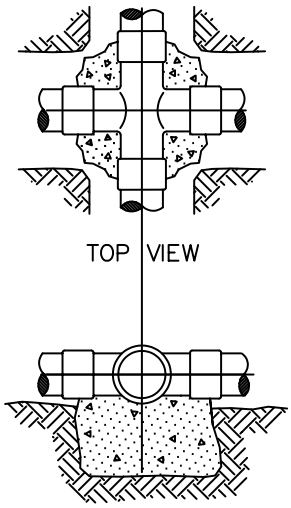
N.T.S.

PIPE CASING

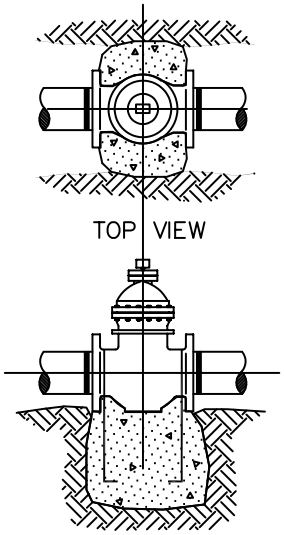
Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA12
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



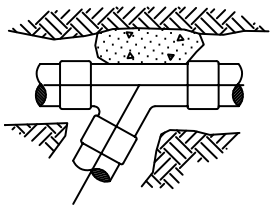
TEE



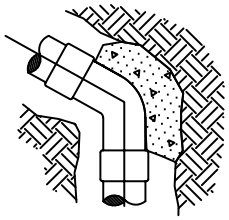
CROSS



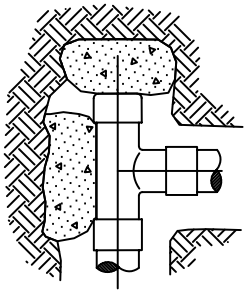
GATE VALVE



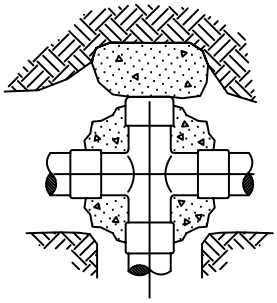
WYE



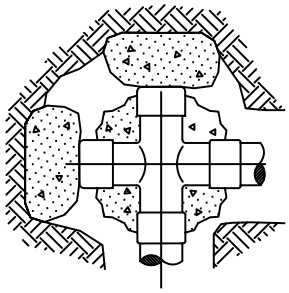
HORIZ. BEND



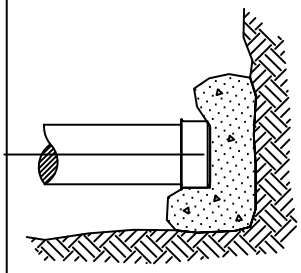
TEE WITH PLUG



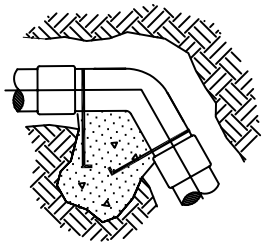
CROSS WITH PLUG



CROSS WITH PLUGS



PLUG OR CAP



45° – 90°
VERTICAL BEND

NOTES:

1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2. PLASTIC BARRIER SHALL BE PLACED BETWEEN ALL THRUST BLOCKS & FITTINGS. PIPE JOINT AND BOLTS MUST BE ACCESSIBLE.
3. ANCHOR REBAR SHALL BE 5/8" MINIMUM DIAMETER.
4. CONTRACTOR SHALL PROVIDE BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE.

N.T.S.

STANDARD BLOCKING DETAIL

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: WA21

THRUST LOADS

THRUST AT FITTINGS IN POUNDS AT 200 POUNDS PER SQUARE INCH OF PRESSURE

PIPE DIAMETER	90° BEND	45° BEND	22–1/2° BEND	11–1/4° BEND	DEAD END OR TEE
4"	3,600	2,000	1,000	500	2,600
6"	8,000	4,400	2,300	1,200	5,700
8"	14,300	7,700	4,000	2,000	10,100
10"	22,300	12,100	6,200	3,100	15,800
12"	32,000	17,400	8,900	4,500	22,700
14"	43,600	23,600	12,100	6,100	30,800
16"	57,000	30,800	15,700	7,900	40,300

NOTES:

1. BLOCKING SHALL BE COMMERCIAL CONCRETE POURED IN PLACE AGAINST UNDISTURBED EARTH. FITTING SHALL BE ISOLATED FROM CONCRETE THRUST BLOCK WITH PLASTIC OR SIMILAR MATERIAL.

2. TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (S.F.):

   EXAMPLE : 12" – 90° BEND IN SAND AND GRAVEL
   32,000 LBS ÷ 3000 LB/S.F. = 10.7 S.F. OF AREA

3. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZE, PRESSURES, AND SOIL CONDITIONS.

4. BLOCKING SHALL BE ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

SAFE SOIL BEARING LOADS

FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 3 FEET

SOIL	POUNDS PER SQUARE FOOT
MUCK, PEAT	0
SOFT CLAY	1,000
SAND	2,000
SAND & GRAVEL	3,000
SAND & GRAVEL CEMENTED WITH CLAY	4,000
HARD SHALE	10,000

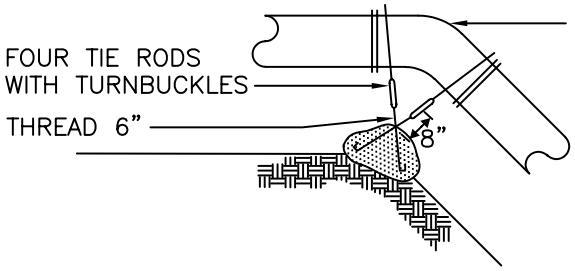
N.T.S.

THRUST LOADS FOR STANDARD BLOCKING

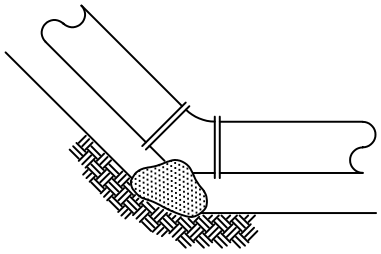
APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: WA22



45° BEND



45° BEND

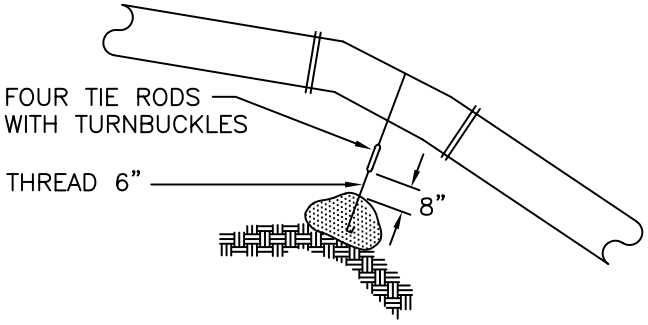


TABLE 1: BEARING VALUE OF SOIL

SOIL TYPE	LBS./S.F.
ALLUVIAL SOIL	1,000
SOFT CLAY	2,000
FIRM CLAY	4,000
WET SAND	4,000
SAND AND CLAY MIXED	4,000
FINE DRY SAND	6,000
HARD CLAY	8,000
COARSE DRY SAND	8,000
GRAVEL	12,000
GRAVEL AND SAND, WELL CEMENTED	16,000
HARDPAN OR HARD SHALE	20,000
MEDIUM ROCK	40,000
ROCK UNDER CAISSONS	50,000
HARD ROCK	160,000

PIPE DIA	TEST PRESSURE PSI	BEND ANGLE	CONCRETE VOLUME FT^3	CUBE SIZE FT	TIE ROD DIA	TIE ROD EMBEDMENT
4"	250	11.25°	6	1.8	5/8"	17"
		22.5°	12	2.3		
		45°	22	2.8		
6"	250	11.25°	14	2.4	5/8"	17"
		22.5°	27	3.0		
		45°	50	3.7		
8"	250	11.25°	25	2.9	5/8"	17"
		22.5°	48	3.6		
		45°	89	4.5		
10"	250	11.25°	38	3.4	5/8"	17"
		22.5°	75	4.2		
		45°	139	5.2		
12"	250	11.25°	55	3.8	5/8"	17"
		22.5°	108	4.8		
		45°	200	5.8	7/8"	24"
14"	250	11.25°	75	4.2	5/8"	17"
		22.5°	147	5.3	3/4"	20"
		45°	272	6.5	1"	27"
16"	250	11.25°	98	4.6	5/8"	17"
		22.5°	192	5.8	7/8"	24"
		45°	355	7.1	1 1/8"	30"

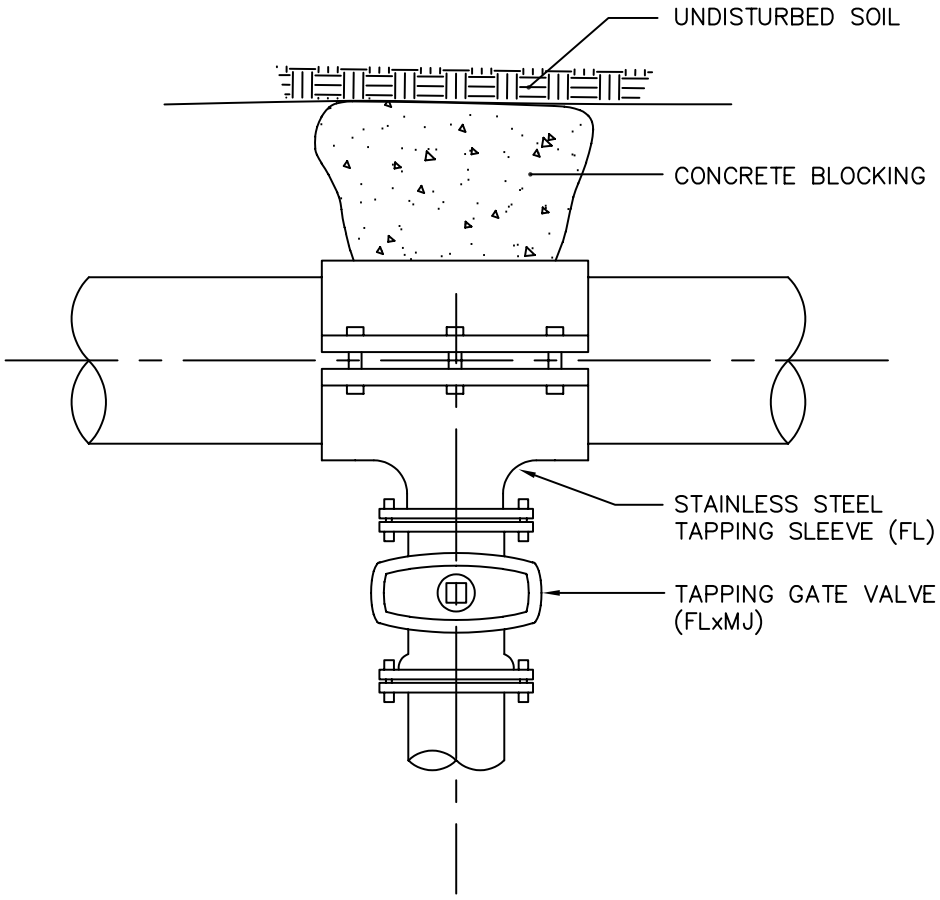
N.T.S.

VERTICAL THRUST BLOCKING

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: WA23



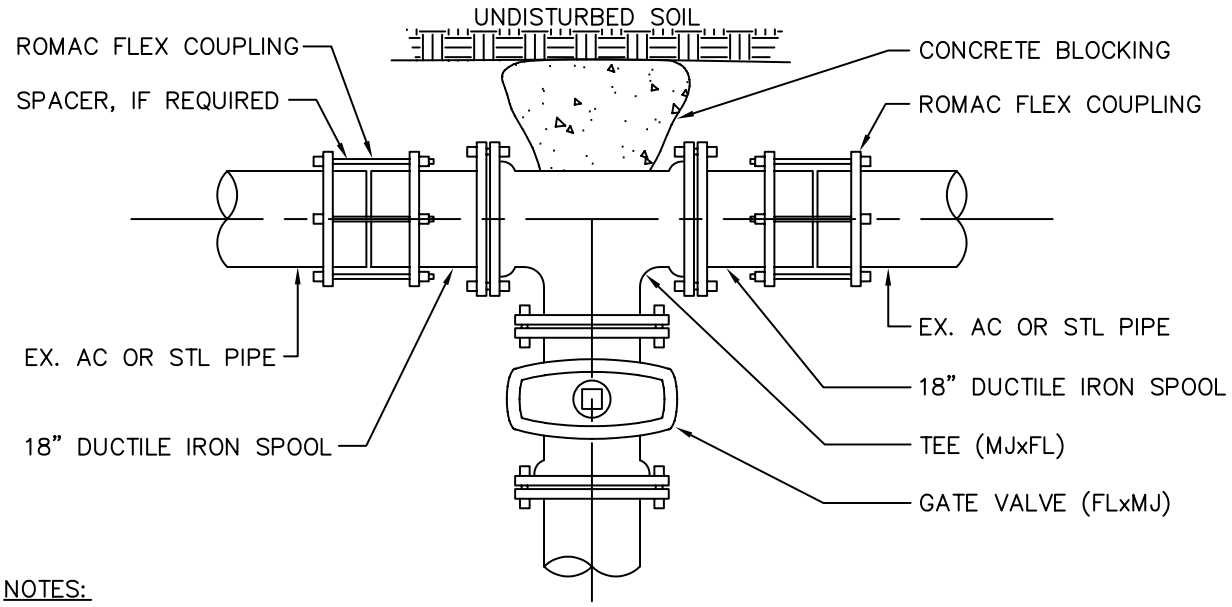
NOTES:

1. ALL CONNECTIONS TO EXISTING MAINS WILL BE MADE WITH SKYWAY PERSONNEL PRESENT, FOLLOWING REQUIRED TESTING OF NEW CONSTRUCTION.
2. STEEL PIPES SHALL BE RECOATED WHERE WRAPPING HAS BEEN DISTURBED (PER AWWA STANDARD C210).
3. A 3'x3'x4" ASPHALT PATCH IS REQUIRED IF VALVE BOX IS SET IN GRAVEL OR UNPAVED SURFACE.
4. PROVIDE SUPPORT BLOCK UNDER TAPPING VALVE. SUPPORT VALVE AND SLEEVE CONTINUOUSLY THROUGH INSTALLATION.
5. TAPPING SLEEVES FOR ASBESTOS CEMENT PIPE SHALL BE SMITH/BLAIR # 662720, ROMAC # SST, OR APPROVED EQUIVALENT. TAPPING SLEEVES FOR DUCTILE AND CAST IRON SHALL BE JCM 412, APAC 532 OR APPROVED EQUIVALENT. TAPPING SLEEVES FOR PVC PIPE SHALL BE JCM 422, NO EQUIVALENTS CONSIDERED.

N.T.S.

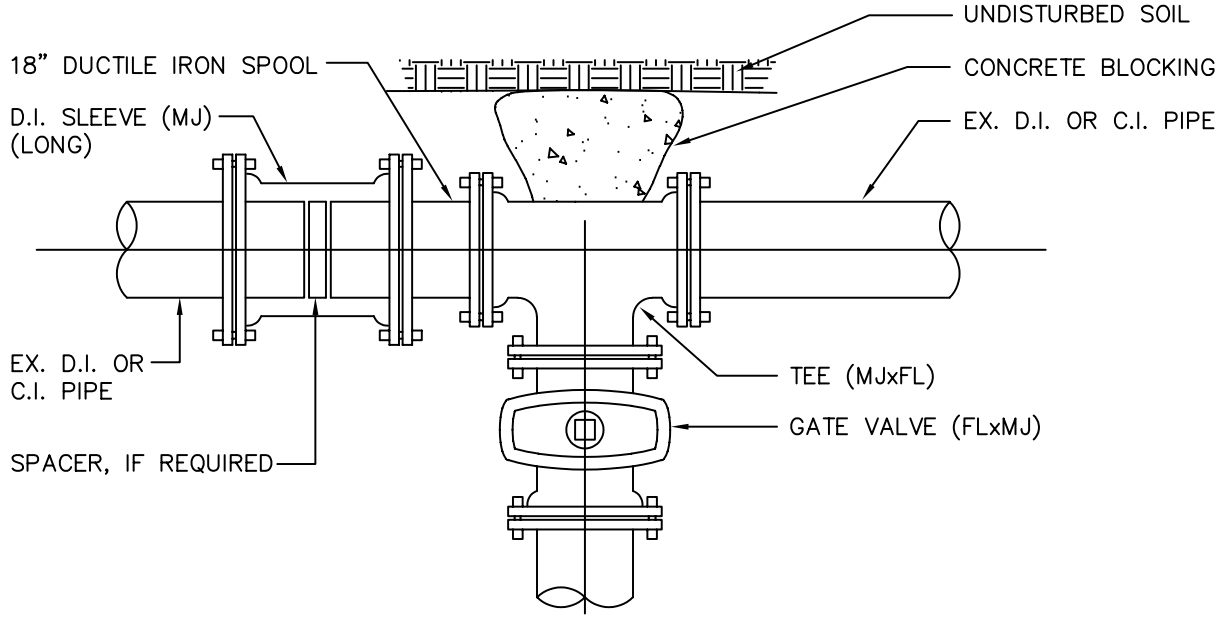
LIVE TAP

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA24
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



NOTES:

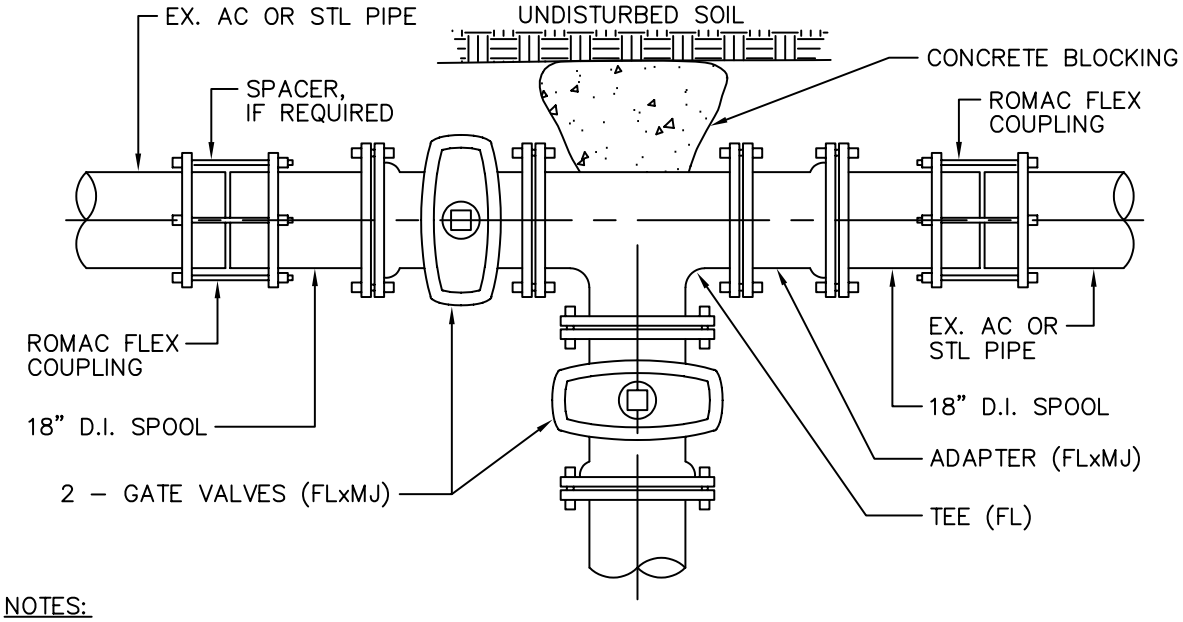
1. THIS VALVE CONFIGURATION SHALL BE RESERVED FOR USE ON FIRE HYDRANT CONNECTIONS.
2. ALL CONNECTIONS TO EXISTING MAINS WILL BE MADE WITH SKYWAY PERSONNEL PRESENT, FOLLOWING REQUIRED TESTING OF NEW CONSTRUCTION.
3. A 3'x3'x4" ASPHALT PATCH IS REQUIRED IF VALVE BOX IS SET IN GRAVEL OR UNPAVED SURFACE.
4. STEEL PIPES SHALL BE RECOATED WHERE WRAPPING HAS BEEN DISTURBED (PER AWWA STANDARD C210).
5. DISINFECT FITTINGS AND PIPE BEFORE MAKING CONNECTION.
6. PROVIDE SUPPORT BLOCK UNDER TEE AND VALVE. SUPPORT VALVE AND SLEEVE CONTINUOUSLY THROUGH INSTALLATION.



N.T.S.

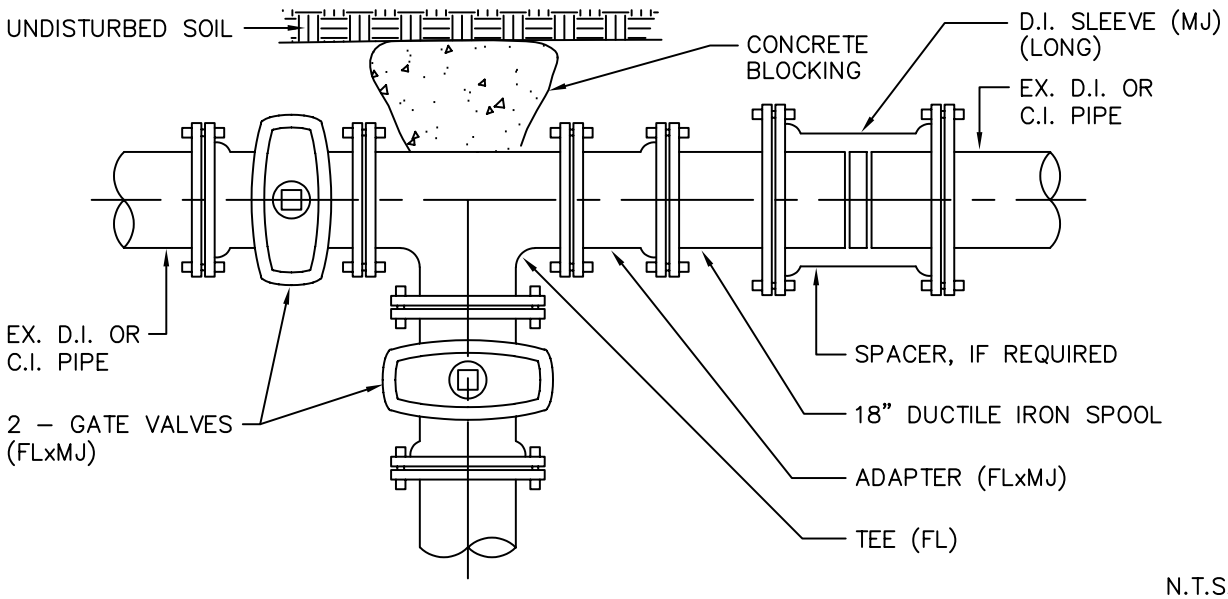
CUT-IN TEE USING SINGLE VALVE

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA25
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



NOTES:

1. THIS VALVE CONFIGURATION SHALL BE RESERVED FOR USE ON SPECIAL FIRE HYDRANT CONNECTIONS.
2. ALL CONNECTIONS TO EXISTING MAINS WILL BE MADE WITH SKYWAY PERSONNEL PRESENT, FOLLOWING REQUIRED TESTING OF NEW CONSTRUCTION.
3. A 3'x3'x4" ASPHALT PATCH IS REQUIRED IF VALVE BOX IS SET IN GRAVEL OR UNPAVED SURFACED.
4. STEEL PIPES SHALL BE RECOATED WHERE WRAPPING HAS BEEN DISTURBED (PER AWWA STANDARD C210).
5. DISINFECT FITTINGS & PIPE USED BEFORE MAKING CONNECTION. PROVIDE SUPPORT BLOCK UNDER TEE AND VALVES SUPPORT.
6. VALVE AND SLEEVE CONTINUOUSLY THROUGH CONSTRUCTION.



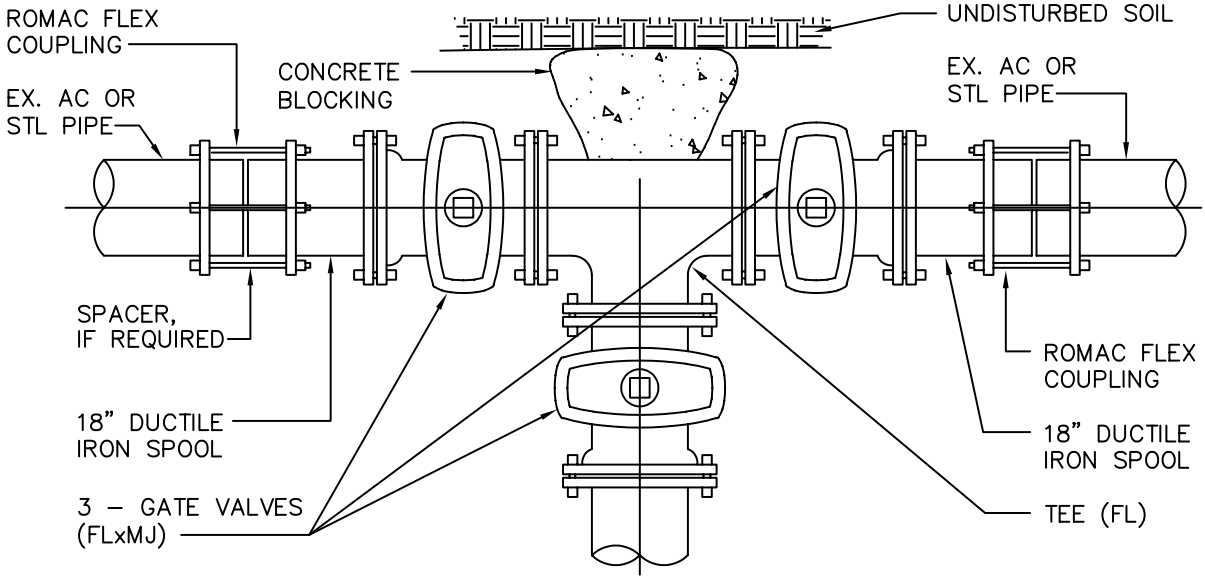
N.T.S.

CUT–IN TEE USING TWO VALVES

APPROVED: _____ DISTRICT ENGINEER _____ DATE

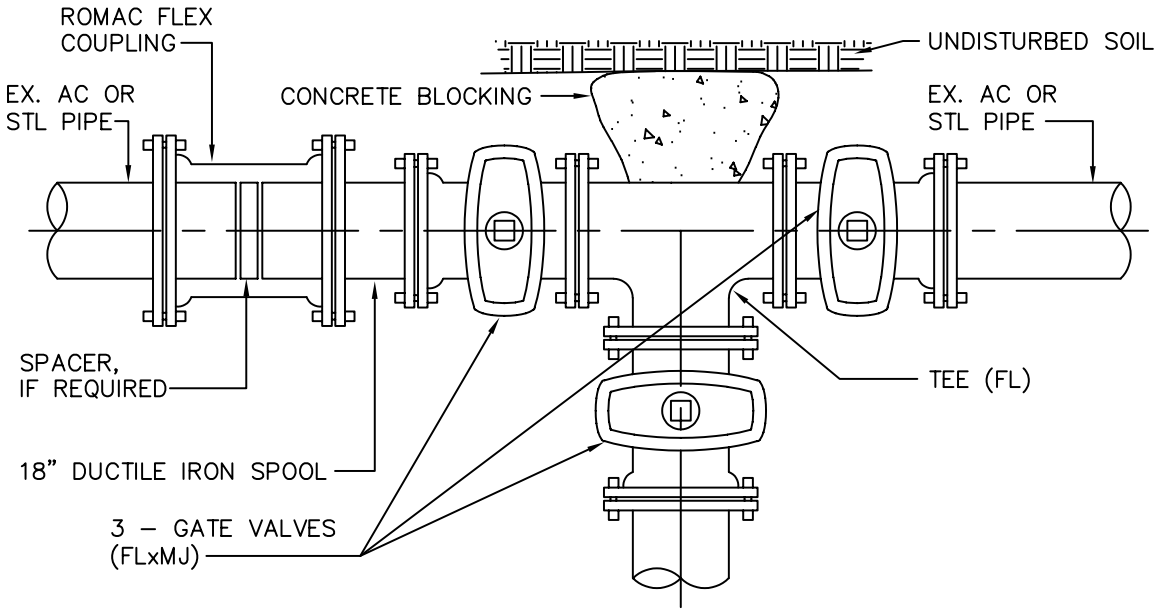
SKYWAY WATER & SEWER DISTRICT | REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: WA26



NOTES:

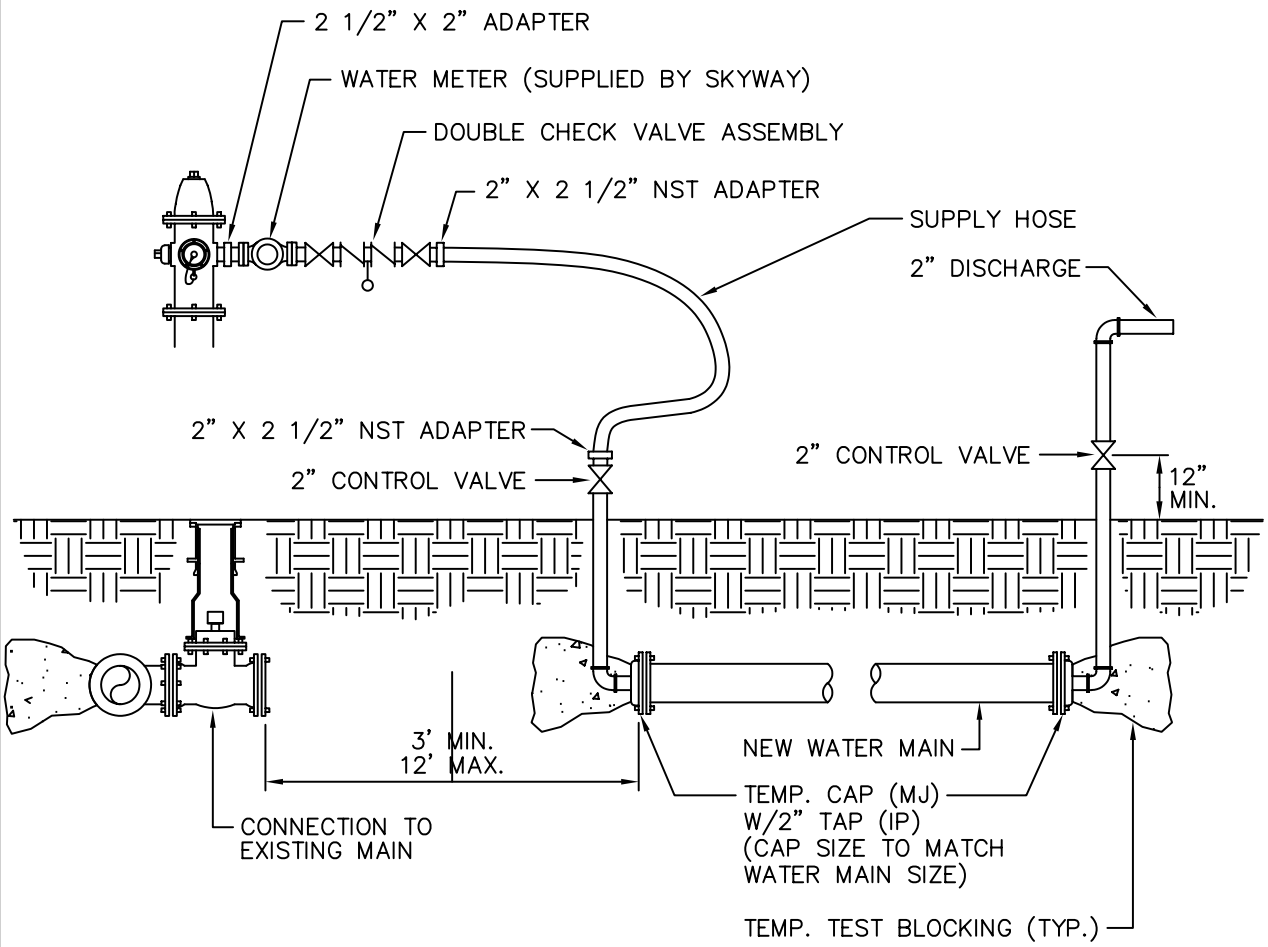
1. ALL CONNECTIONS TO EXISTING MAINS WILL BE MADE WITH SKYWAY PERSONNEL PRESENT, FOLLOWING REQUIRED TESTING OF NEW CONSTRUCTION.
2. A 3'x3'x4" ASPHALT PATCH IS REQUIRED IF VALVE BOX IS SET IN GRAVEL OR UNPAVED SURFACE.
3. STEEL PIPES SHALL BE RECOATED WHERE WRAPPING HAS BEEN DISTURBED (PER AWWA STANDARD C210–84).
4. DISINFECT FITTINGS & PIPE BEFORE MAKING CONNECTION.
5. PROVIDE SUPPORT BLOCK UNDER TEE AND VALVES. SUPPORT VALVE AND SLEEVE CONTINUOUSLY THROUGH INSTALLATION.



N.T.S.

CUT–IN TEE USING THREE VALVES

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA27
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



TEMPORARY FLUSHING/TESTING CONNECTIONS

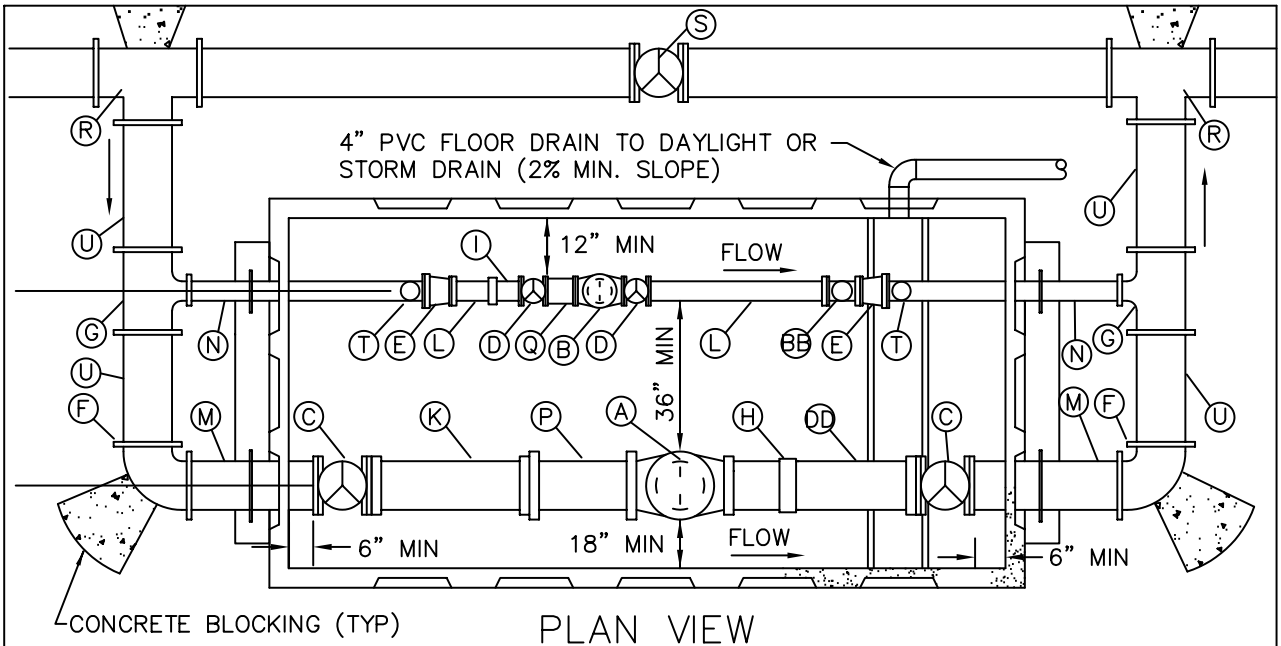
NOTES:

1. DISTRICT SHALL OPERATE ALL VALVES.
2. ALL FITTINGS TO BE DUCTILE IRON. ALL EXCAVATION SHALL PROVIDE A MINIMUM OF 12" CLEARANCE AROUND PIPE & FITTINGS.
3. CONTRACTOR TO DETERMINE ALIGNMENT & GRADE OF EXISTING FACILITIES PRIOR TO INSTALLATION OF NEW WATER MAIN. OUTSIDE DIAMETER OF EXISTING WATER MAIN TO BE DETERMINED AT THE SAME TIME THE CONTRACTOR EXCAVATES FOR ALIGNMENT & GRADE.
4. ALL EXCAVATION, PIPE, FITTINGS (EXCEPT AS NOTED), OTHER MATERIAL, BACKFILL, COMPACTION & STREET RESTORATION BY CONTRACTOR. ALL MATERIALS TO BE ON JOB SITE PRIOR TO SCHEDULED SHUT–DOWN OF EXISTING WATER MAIN(S).
5. D.I. SLEEVE (MJ) TO BE INSERTED AT TIME OF CONNECTION FOR CUT INTO EXISTING WATER MAIN.
6. D.I. SLEEVE(S) FURNISHED BY CONTRACTOR FOR CUT INTO EXISTING WATER MAIN.
7. THE CONTRACTOR SHALL COMPLY WITH ESA BMP'S AND MEET REGULATORY AGENCY REQUIREMENTS WHEN FLUSHING NEW CONSTRUCTION AND DISCHARGE WATER FROM THE SYSTEM.
8. COORDINATE WITH SEWER UTILITY BEFORE DISCHARGE TO SEWERS.
9. FITTINGS & HOSE SIZE SHOWN ARE MINIMUM SIZE. USE LARGER SIZE AS NEEDED FOR 2.5 F.P.S. FLUSHING.
10. DISTRICT HYDRANT PERMIT REQUIRED.

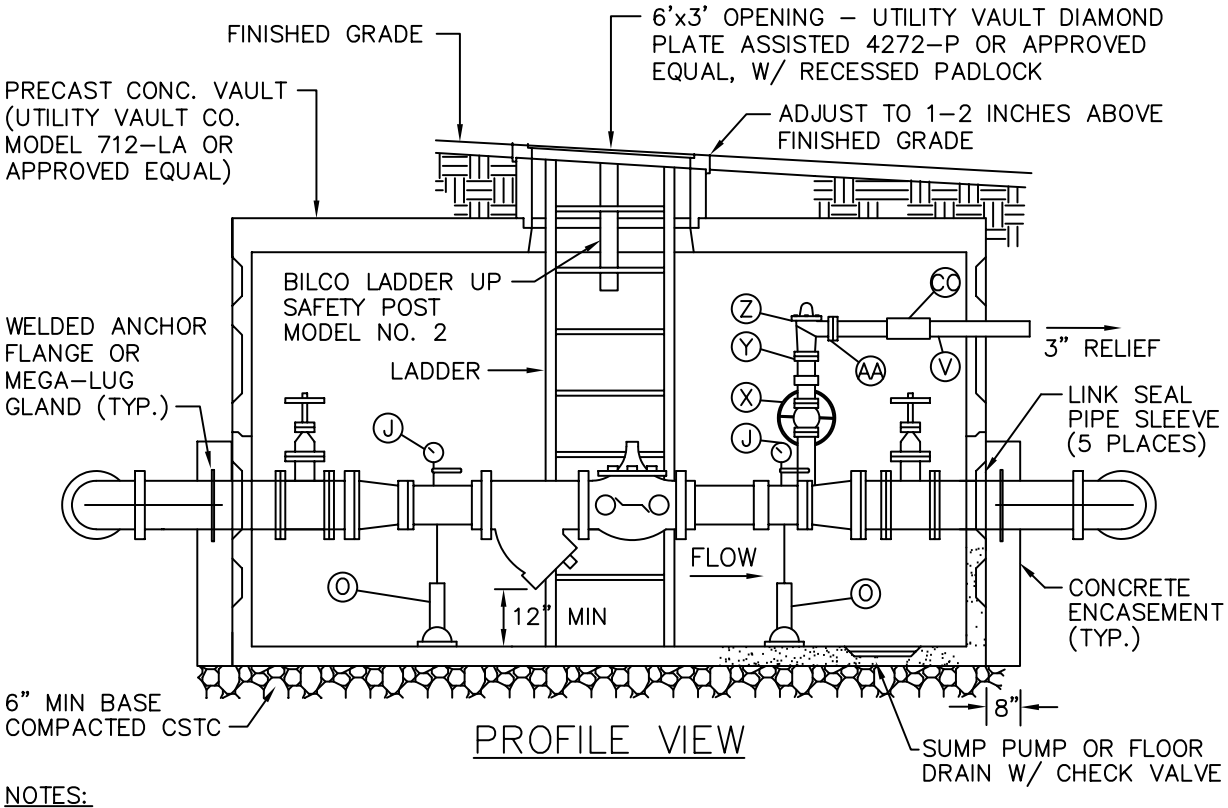
N.T.S.

TEMPORARY FLUSHING/TESTING SETUP FOR CONNECTION TO EXISTING WATER MAINS

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA28
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



PLAN VIEW



PROFILE VIEW

NOTES:

1. INTERIOR AND EXTERIOR SHALL BE PAINTED TNEMEC WHITE.
2. 3" FITTINGS SHALL BE BRASS. ALL 3" TYPE SHALL BE RIGID COPPER TYPE K.
3. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS RESULTING FROM THE FITTING SCHEDULE TO ENSURE THE APPROPRIATE SIZING OF THE SPECIFIED VAULT.

N.T.S.

PRESSURE REDUCING STATION

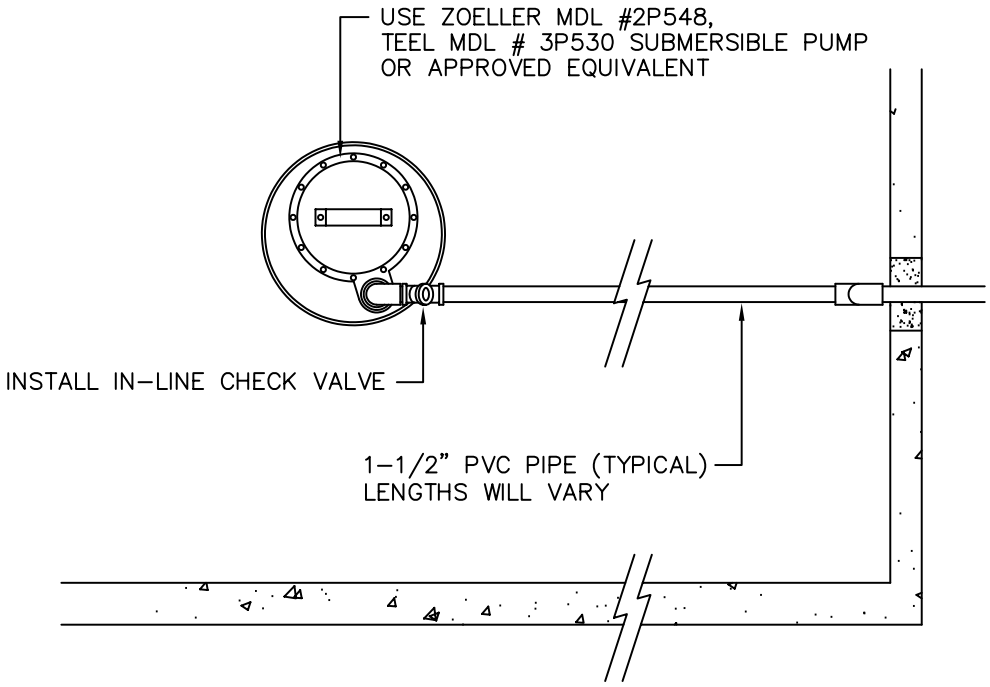
Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA31A
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005

MATERIALS LIST

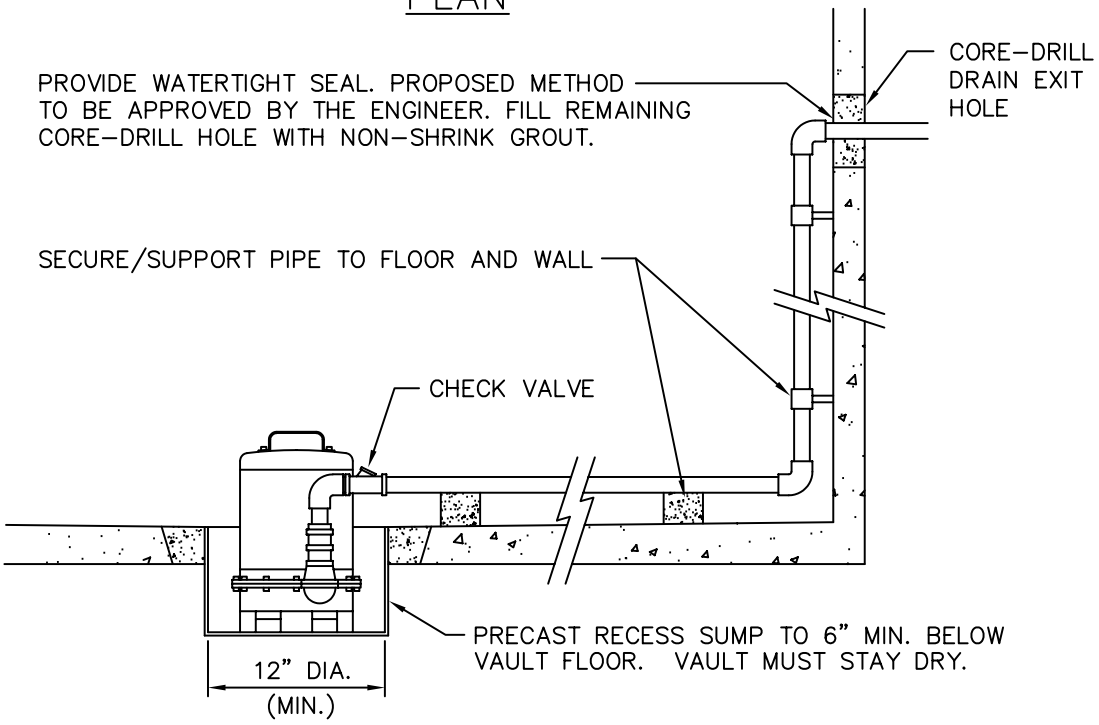
A. 8" CLAYTON 906-01AB - CLASS 150 PRESSURE REDUCING VALVE, FL
B. 3" CLAYTON 906-OIAS - CLASS 150 PRESSURE REDUCING VALVE, FL
C. 8" GATE VALVE, FL (2 REQUIRED)
D. 3" GATE VALVE, FL (2 REQUIRED)
E. 4"x3" (FL) REDUCER (2 REQUIRED)
F. MAIN LINE SIZE (MJ) 90 ELL (2 REQUIRED) W/ MEGALUGS
G. MAIN LINE SIZE x 4" (MJxFL) TEE (2 REQUIRED)
H. 8" SHORTBODY ADAPTER, FLxMJ W/ MEGALUG
I. 3" COUPLING, FL
J. PRESSURE GAUGE WITH SHUT-OFF VALVE
PETCOCK W/ DRAIN VIEWABLE FROM GROUND SURFACE (2 REQUIRED)
K. 8" (FL) SPOOL (LENGTH AS REQUIRED-MIN 18")
L. 3" (FL) SPOOL (LENGTH AS REQUIRED)
M. MAINLINE SIZE (MJxFL) SPOOL (LENGTH AS REQ.)
N. 4" (FL) SPOOL (LENGTH AS REQUIRED)
O. PIPE SUPPORTS (2 REQUIRED)
P. 8" WYE STRAINER (FL) 1/8"ø SCREEN WITH 2" CORP STOP ON DRAIN.
Q. 3" WYE STRAINER WITH 20 MESH SCREEN (FL)
R. MAINLINE SIZE TEE (2 EACH) MJ W/ MEGALUG
S. MAINLINE GV, MJ
T. 1/4" GAUGE COCK & PRESSURE GAUGE, VISIBLE FROM HATCH OPENING
U. DI SPOOL, MAINLINE SIZE
V. BLOW-OFF PIPED TO OUTSIDE TO DRAINAGE COURSE
X. 3" MUELLER A2360 NRS RW GATE VALVE C/W HANDWHEEL #125 OR APPROVED EQUIVALENT, FLANGE
Y. 3" VICTAULIC #07 COUPLING
Z. 3" CLA-VAL 50-01B ANGLE PRESSURE RELIEF VALVE DIBT-#150 FLANGE
AA. 3" VICTAULIC #741 FLANGE ADAPTER
BB. 3" TEE FL
CC. 3" CHECK VALVE (FLAPPER-TYPE)
DD. 8" (PExFL) SPOOL (LENGTH AS REQUIRED-MIN 18")

PRESSURE REDUCING STATION MATERIALS LIST

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA31B
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



PLAN

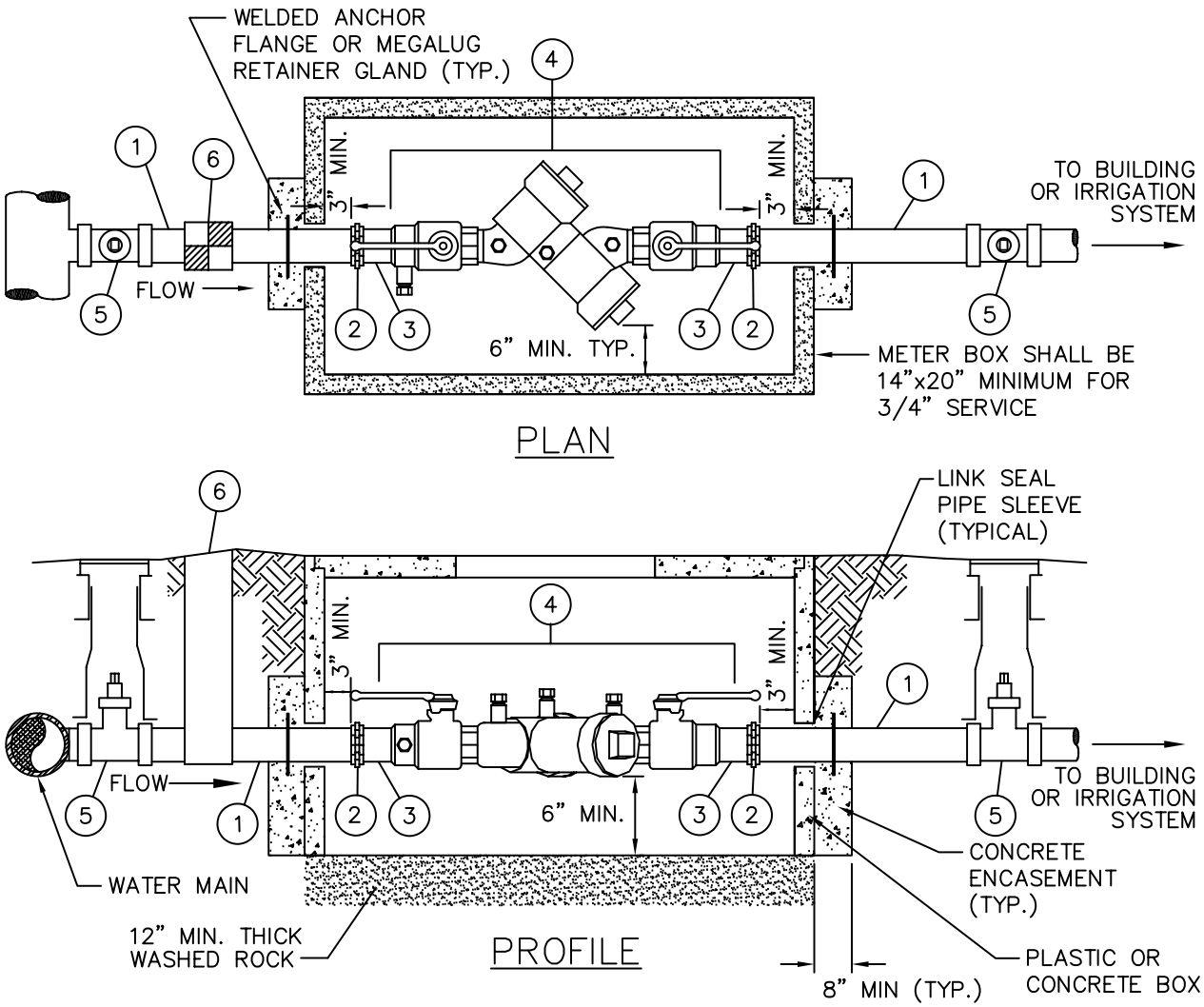


PROFILE

N.T.S.

SUMP PUMP INSTALLATION

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA32
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



MATERIAL LIST:

1. SERVICE LINE
2. UNION
3. NIPPLE
4. DOUBLE CHECK VALVE ASSEMBLY (DOH APPROVED)
5. ISOLATION VALVE
6. WATER METER PER SKYWAY STD DETAIL

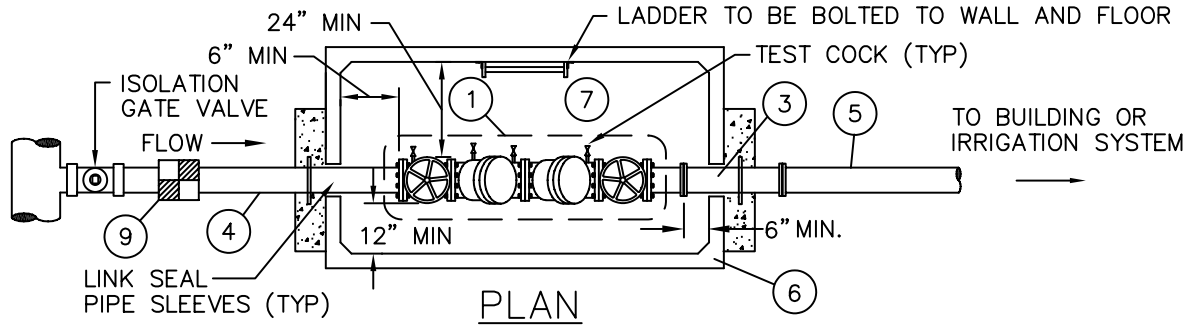
NOTES:

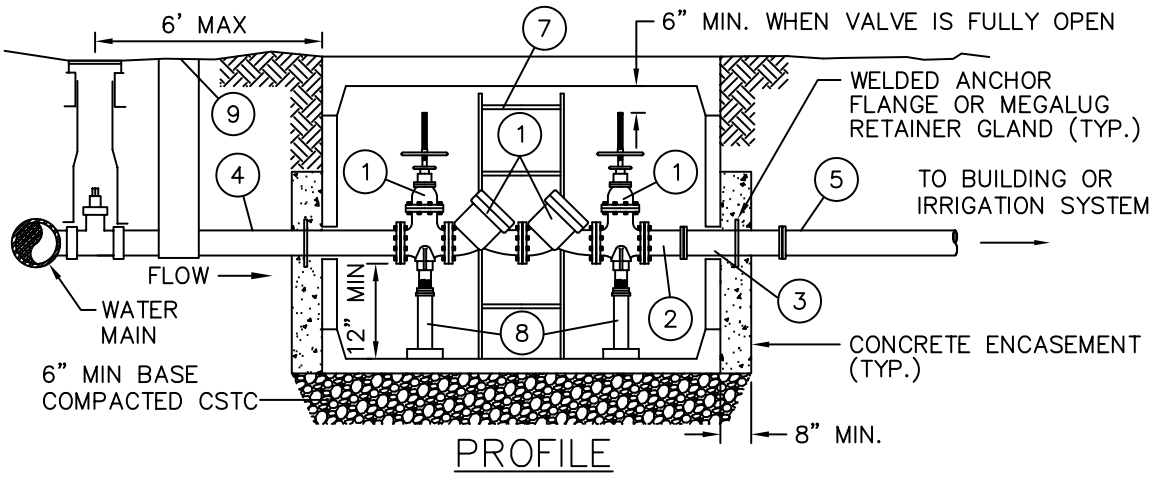
A. DCVA IS TO BE PRIVATELY OWNED AND LOCATED ON PRIVATE PROPERTY.
B. DCVA IS TO BE PROTECTED FROM FREEZING.
C. METER BOX SHALL BE LARGE ENOUGH TO ALLOW THE MINIMUM SET BACKS ILLUSTRATED ABOVE. METER BOX LID SHALL BE A TRAFFIC METER READER LID. H-20 LOADING.
D. METER BOX SHALL BE SUPPORTED BY FOUR 16"x8"x4" SOLID CONCRETE BLOCKS
E. DCVA SHALL BE TESTED, UPON INSTALLATION, BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, AND THE REPORT FORM BE RECEIVED BY THE DISTRICT CROSS-CONNECTION CONTROL SPECIALIST PRIOR TO OCCUPANCY.
F. REFER TO THE LATEST EDITION OF THE ACCEPTED PROCEDURE AND PRACTICE MANUAL (YELLOW MANUAL) FOR FURTHER INFORMATION.
G. DIELECTRIC UNIONS MUST BE USED TO SEPARATE DISSIMILAR MATERIALS.
H. THOROUGHLY FLUSH THE LINES PRIOR TO INSTALLING DCVA.
I. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS RESULTING FROM THE FITTING SCHEDULE TO ENSURE THE APPROPRIATE SIZING OF THE SPECIFIED VAULT.

N.T.S.

DOUBLE CHECK VALVE ASSEMBLY FOR 2" OR SMALLER

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA41
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005





MATERIAL LIST:

1. DOUBLE CHECK VALVE ASSEMBLY, FL (DOH APPROVED)
2. ADAPTER–SHORTBODY (FLxPE)
3. LONG–BODY DI PIPE SLEEVE (MJxMJ) W/ MEGALUGS
4. CLASS 52 DI PIPE (FLxPE)
5. CLASS 52 DI PIPE (PE)
6. VAULT FOR 3" TO 4" DCV ASSEMBLIES – USE PIPE INC. VAULT NO. 448402 W/ L.W. HATCH NO. HDSA 3' X 3' DOUBLE DOOR OR APPROVED EQUAL. CONTRACTOR SHALL SUBMIT PROPOSED VAULT TO DISTRICT FOR APPROVAL FOR METER SIZES GREATER THAN 4"
7. LADDER
8. VALVE STANDS
9. WATER METER PER SKYWAY STD DETAIL

NOTES:

A. DCVA IS TO BE PRIVATELY OWNED AND LOCATED ON PRIVATE PROPERTY.
B. WHERE PIPING PASSES THROUGH CONCRETE WALL, PROVIDE 2" CLEARANCE W/ WATERPROOF MASTIC OR FLEXIBLE SEALANT.
C. DCVA SHALL BE TESTED, UPON INSTALLATION, BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, AND THE REPORT FORM SHALL BE RECEIVED BY THE DISTRICT CROSS–CONTAMINATION CONTROL SPECIALIST PRIOR TO OCCUPANCY.
D. REFER TO LATEST EDITION OF THE AWWA ACCEPTED PROCEDURE AND PRACTICE MANUAL (YELLOW MANUAL) FOR FURTHER INFORMATION.
E. DIAMETER OF PIPE AND FITTINGS = _____ INCHES
F. THOROUGHLY FLUSH THE LINES PRIOR TO INSTALLING BACK FLOW ASSEMBLY.
G. ALL VAULTS MUST BE EQUIPPED WITH A DRAIN OR SUMP PUMP.
H. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS RESULTING FROM THE FITTING SCHEDULE TO ENSURE THE APPROPRIATE SIZING OF THE SPECIFIED VAULT.

N.T.S.

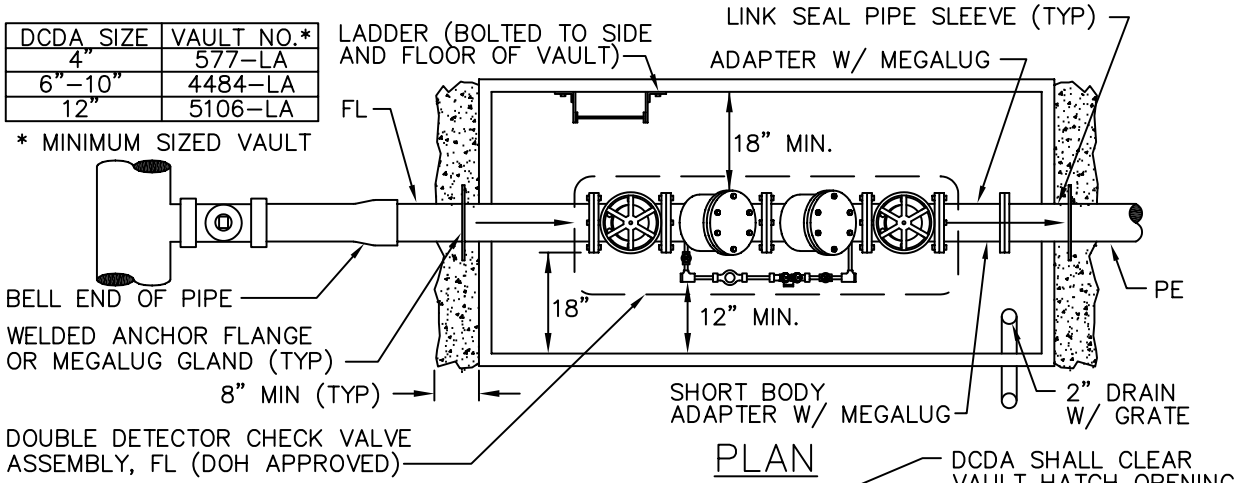
DOUBLE CHECK VALVE ASSEMBLY FOR 3" AND LARGER

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA42
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005

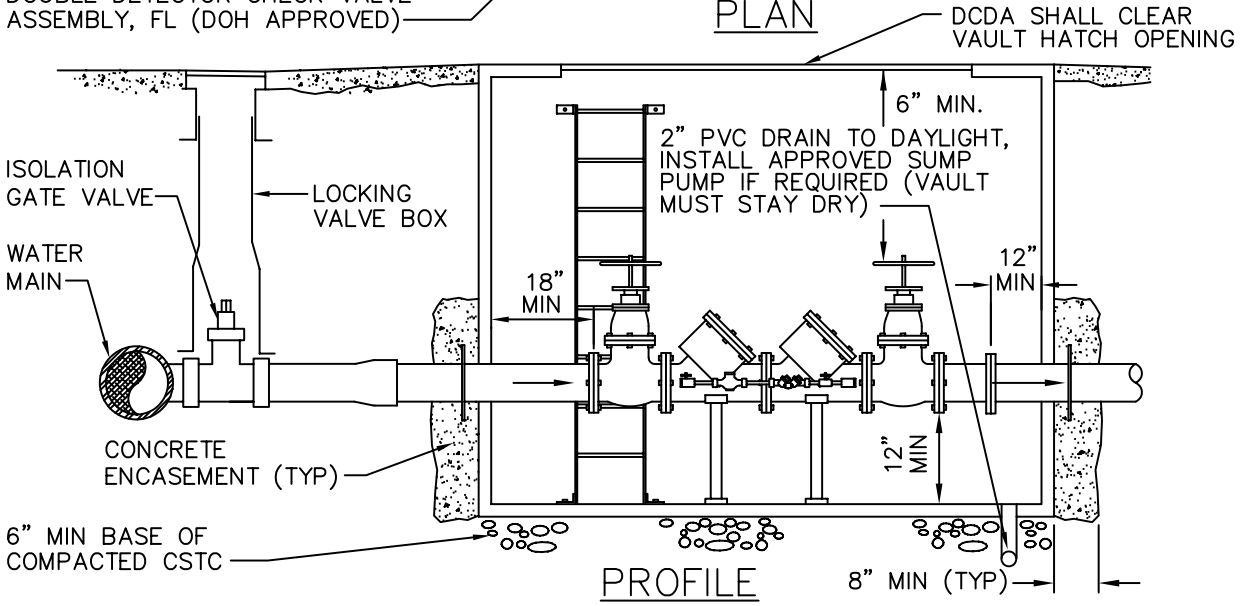
CONCRETE VAULT SHALL BE EQUIPPED W/ DOUBLE COVER TRAFFIC LID AS MANUFACTURED BY UTILITY VAULT COMPANY.

DCDA SIZE	VAULT NO.*
4"	577-LA
6"-10"	4484-LA
12"	5106-LA

* MINIMUM SIZED VAULT



PLAN



PROFILE

NOTES:

A. DCDA IS TO BE PRIVATELY OWNED AND LOCATED ON PRIVATE PROPERTY.
B. WHERE PIPING PASSES THROUGH CONCRETE WALL PROVIDE LINK SEAL PIPE SLEEVE.
C. DCDA SHALL BE TESTED, UPON INSTALLATION, BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, AND THE REPORT FORM BE RECEIVED BY THE WATER OPERATIONS INSPECTOR PRIOR TO OCCUPANCY.
D. REFER TO LATEST EDITION OF THE AWWA ACCEPTED PROCEDURE AND PRACTICE MANUAL (YELLOW MANUAL) FOR FURTHER INFORMATION.
E. DIAMETER OF PIPE AND FITTINGS = _____ INCHES
F. THOROUGHLY FLUSH THE LINES PRIOR TO INSTALLING BACK FLOW ASSEMBLY.
G. ALL VAULTS MUST BE EQUIPPED WITH A DRAIN OR SUMP PUMP.
H. COVER SHALL NOT EXTEND MORE THAN 3" ABOVE GRADE WHEN VAULT IS NOT IN TRAFFIC AREA.
I. SLOPE PAVEMENT AWAY FROM COVER WHEN VAULT IS IN TRAFFIC AREA.
J. INSTALL VALVE MARKER POST PER STANDARD DETAIL WA10.
K. PROVIDE & INSTALL ALARM SYSTEM WITH ASSOCIATED CONDUIT, WIRING, AND COMMUNICATION SYSTEM AS REQUIRED BY FIRE DISTRICT.
L. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS RESULTING FROM THE FITTING SCHEDULE TO ENSURE THE APPROPRIATE SIZING OF THE SPECIFIED VAULT.

N.T.S.

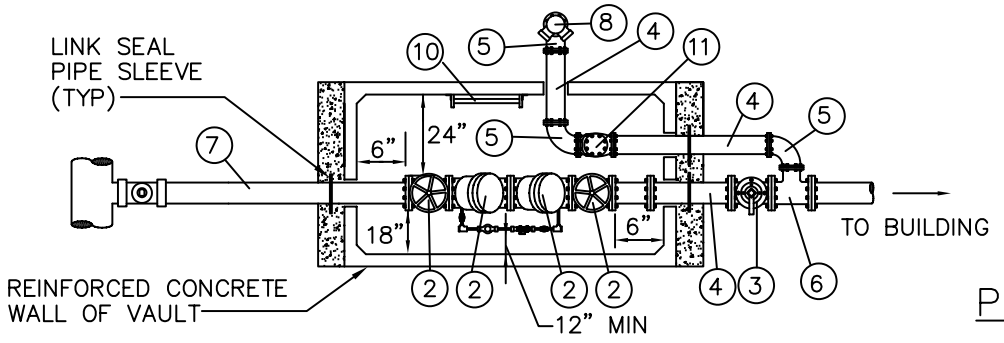
DOUBLE CHECK DETECTOR ASSEMBLY AND VAULT

Skyway water & sewer

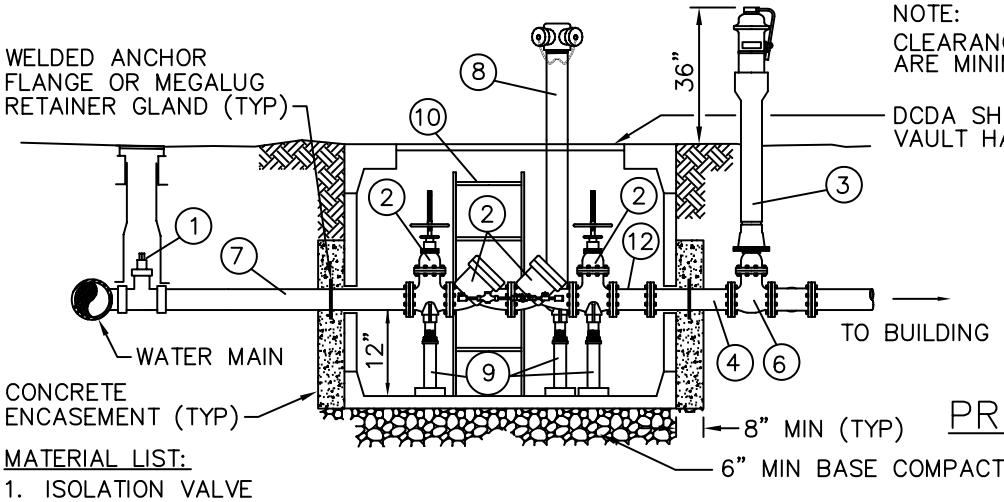
APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: WA44



PLAN



PROFILE

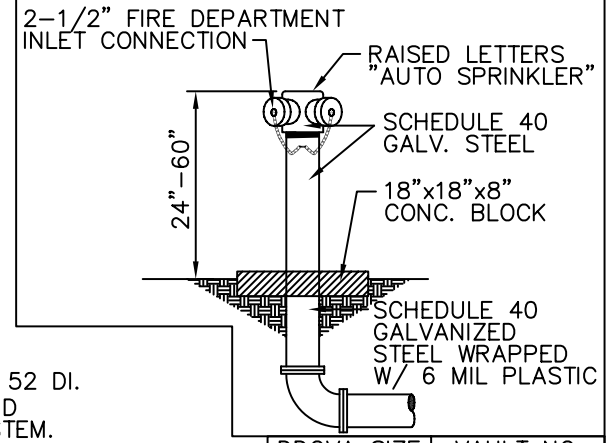
NOTE:
CLEARANCE DIMENSIONS ARE MINIMUMS.

DCDA SHALL CLEAR VAULT HATCH OPENING

MATERIAL LIST:

1. ISOLATION VALVE
2. DOUBLE CHECK VALVE ASSEMBLY, FL (DOH APPROVED)
3. POST INDICATOR VALVE (W/ APPROPRIATE THRUST BLOCKING)
4. CLASS 52 DI WALL PIPE (FLxFL) – 3' MIN
5. CLASS 52 DI 90° BEND (FLxFL)
6. CLASS 52 DI TEE (FLxFL)
7. CLASS 52 DI WALL PIPE (FLxPE)
8. FIRE DEPARTMENT CONNECTION
9. VALVE STANDS
10. LADDER, BOLTED TO WALL & FLOOR OF VAULT
11. SWING CHECK VALVE W/ BALL DRIP ASSEMBLY
12. ADAPTER – SHORT BODY (FLxMJ) W/ MEGALUG

FIRE DEPARTMENT CONNECTION



DDCVA SIZE	VAULT NO.
4"	577–LA
6"–10"	4484–LA
12"	5106–LA

GENERAL NOTES:

A. THOROUGHLY FLUSH LINES PRIOR TO INSTALLING BACK FLOW ASSEMBLY.
B. PIPE FROM VAULT TO BUILDING SHALL BE CLASS 52 DI.
C. TAMPER SWITCHES SHALL BE INSTALLED ON 1 AND AND 3 CONNECTED TO BUILDING FIRE ALARM SYSTEM.
D. DIAMETER OF PIPE AND FITTINGS = _____ INCHES
E. ALL PIPING SHALL BE A MINIMUM OF 4" DIA. AS PER NFPA13.
F. ALL VAULTS SHALL BE EQUIPPED WITH A DRAIN AND CHECK VALVE, OR SUMP PUMP. VAULT SHALL STAY DRY.
G. PROVIDE AND INSTALL ALARM SYSTEM WITH ASSOCIATED CONDUIT, WIRING, AND COMMUNICATION SYSTEM AS REQUIRED BY FIRE DISTRICT.
H. COVER SHALL NOT EXTEND MORE THAN 3" ABOVE GRADE WHEN VAULT IS NOT IN TRAFFIC AREA.
I. SLOPE PAVEMENT AWAY FROM COVER WHEN VAULT IS IN TRAFFIC AREA
J. VAULT SHALL BE OF ADEQUATE HEIGHT TO PROVIDE MIN. 6" CLEARANCE WHEN OS&Y VALVE IS FULLY OPEN.
K. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS RESULTING FROM THE FITTING SCHEDULE TO ENSURE THE APPROPRIATE SIZING OF THE SPECIFIED VAULT.

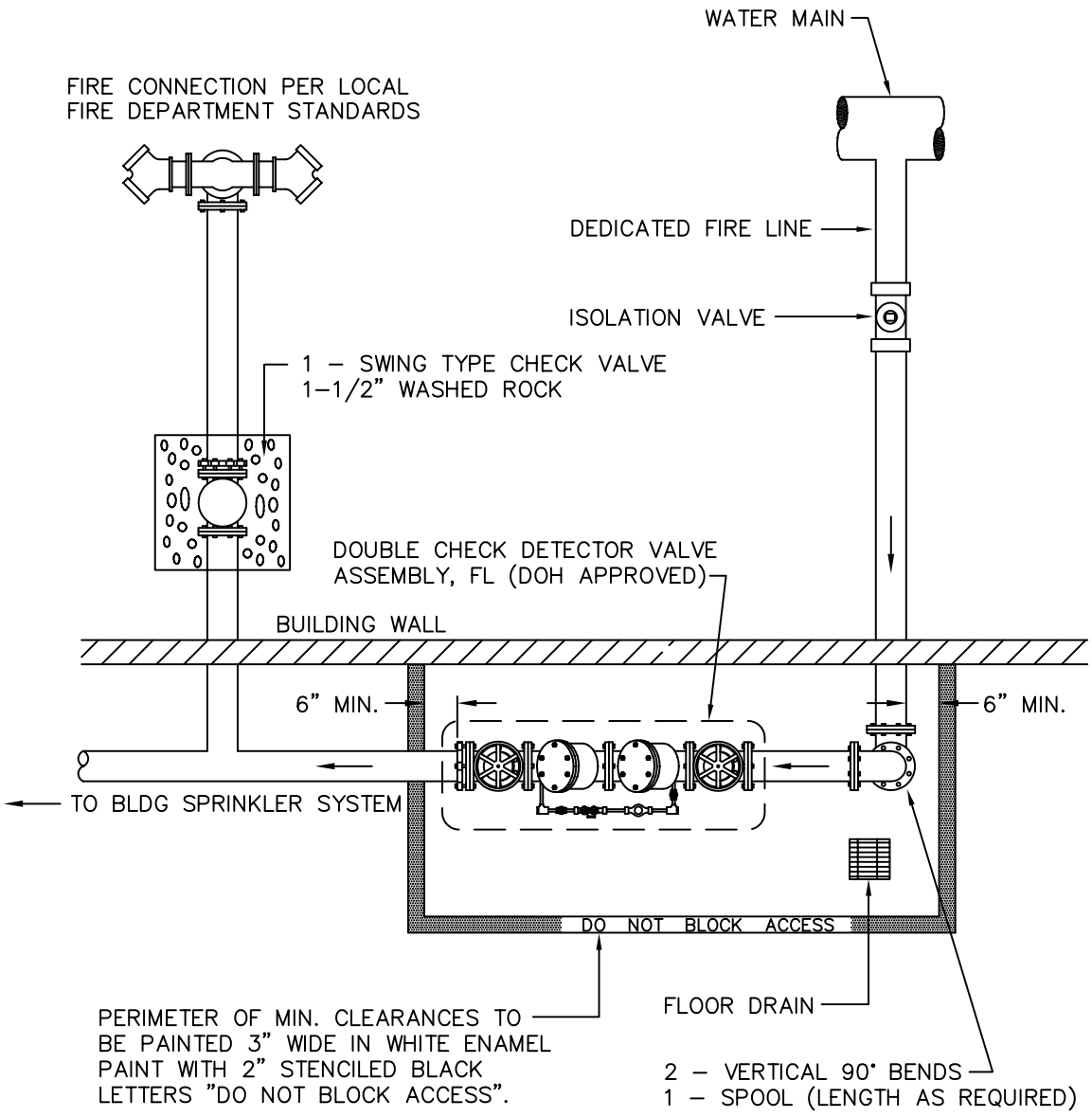
N.T.S.

DOUBLE CHECK DETECTOR AND VAULT W/ FDC

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: WA45



PLAN VIEW

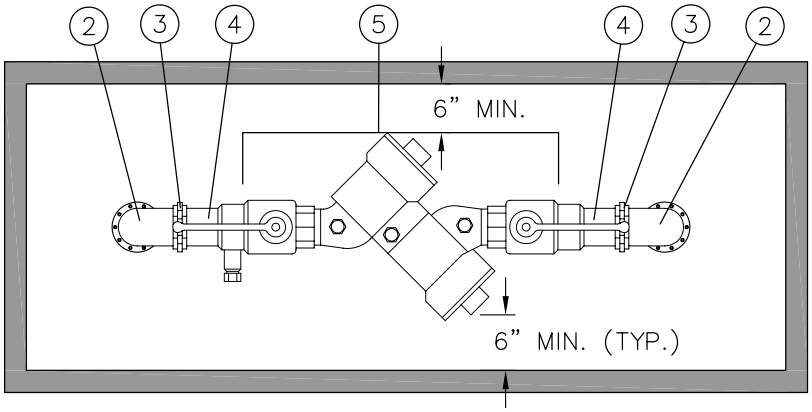
NOTE:

PROVIDE AND INSTALL ALARM SYSTEM WITH ASSOCIATED CONDUIT, WIRING, AND COMMUNICATION SYSTEM AS REQUIRED BY THE FIRE DISTRICT.

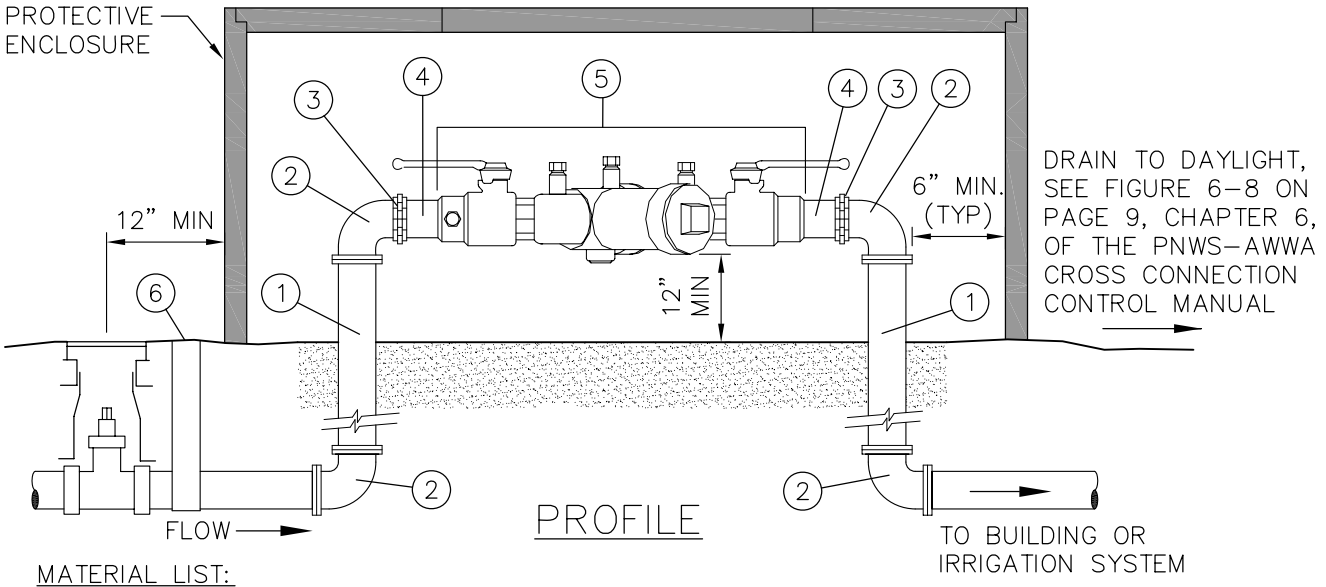
N.T.S.

DOUBLE CHECK DETECTOR INSIDE BUILDING W/ FDC (4" AND LARGER)

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA46
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005



PLAN



PROFILE

MATERIAL LIST:

1. SERVICE LINE
2. 90° BEND
3. UNION
4. NIPPLE
5. DOH APPROVED REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY (RPBA)
6. WATER METER PER SKYWAY STD DETAIL

NOTES:

A. THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION.

B. DIAMETER OF PIPE AND FITTINGS = _____ INCHES

C. REFER TO LATEST EDITION OF ACCEPTED PROCEDURE AND PRACTICES (YELLOW MANUAL) FOR FURTHER INFORMATION.

D. FROST-PROOF BOX

E. SEE STANDARD DETAIL WA49 FOR RPBA NOTES.

F. ISOLATION VALVE SHALL BE PLACED UPSTREAM OF RPBA

G. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS RESULTING FROM THE FITTING SCHEDULE TO ENSURE THE APPROPRIATE SIZING OF THE SPECIFIED VAULT.

H. PROPERTY OWNER SHALL INSTALL A VALVE DOWNSTREAM OF DEVICE TO PREVENT BACKFLOW DURING MAINTENANCE.

N.T.S.

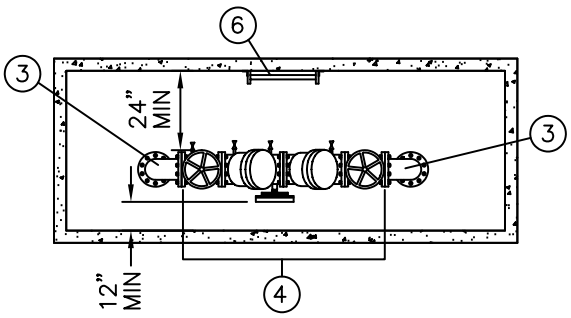
REDUCED PRESSURE BACKFLOW ASSEMBLY FOR 2" & SMALLER

APPROVED: _____ DISTRICT ENGINEER _____ DATE

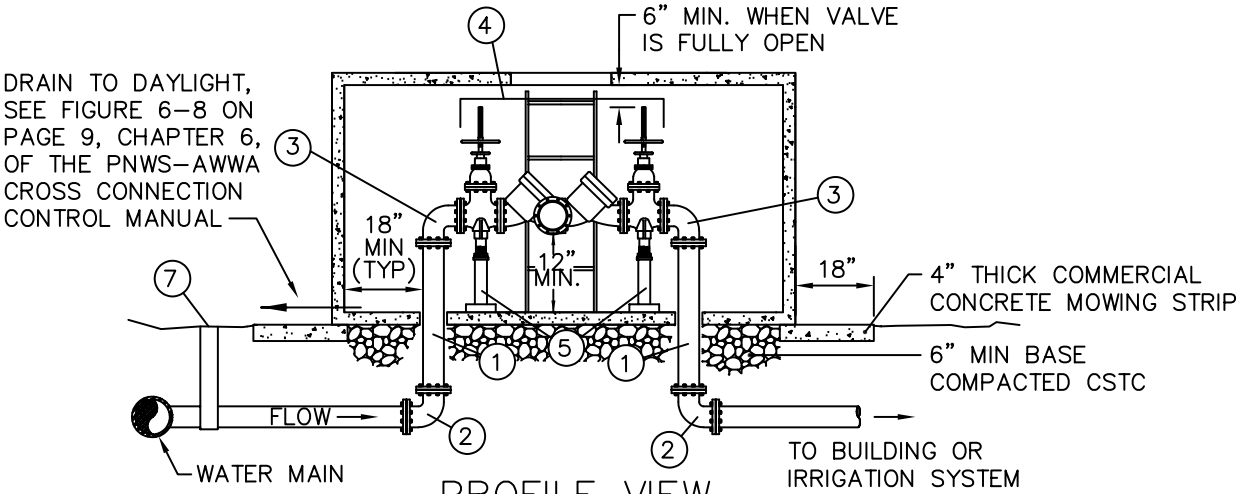
SKYWAY WATER & SEWER DISTRICT

REVISED DATE: JANUARY 2009

DETAIL NUMBER: WA47



PLAN VIEW



PROFILE VIEW

MATERIAL LIST:

1. CLASS 52 D.I. WALL PIPE FL X FL
2. 90° BEND FL X MEGALUG
3. 90° BEND FL X FL
4. DOH APPROVED REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY (FL)
5. SUPPORT STANDS
6. LADDER
7. WATER METER PER SKYWAY STD DETAIL

NOTES:

A. WHERE PIPING PASSES THROUGH VAULT WALL, PROVIDE WATERPROOF MASTIC OR FLEXIBLE SEALANT.

B. DIAMETER OF PIPE AND FITTINGS = _____ INCHES

C. REFER TO LATEST EDITION OF ACCEPTED PROCEDURE AND PRACTICES (YELLOW MANUAL) FOR FURTHER INFORMATION.

D. VAULT MUST BE EQUIPPED WITH AN ADEQUATELY SIZED FLOOR DRAIN.

E. THOROUGHLY FLUSH LINES PRIOR TO INSTALLING BACKFLOW ASSEMBLY.

F. SEE STANDARD DETAIL WA49 FOR RPBA NOTES

G. ISOLATION VALVE SHALL BE PLACED UPSTREAM OF RPBA

H. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS RESULTING FROM THE FITTING SCHEDULE TO ENSURE THE APPROPRIATE SIZING OF THE SPECIFIED VAULT.

N.T.S.

REDUCED PRESSURE BACKFLOW ASSEMBLY FOR 3" & GREATER

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE	DETAIL NUMBER: WA48
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005

1. THE RPBA SHALL BE INSTALLED WITH ADEQUATE SPACE TO FACILITATE MAINTENANCE AND TESTING. IT SHALL BE TESTED AFTER INSTALLATION BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, TO ENSURE ITS SATISFACTORY OPERATION.

2. AN RPBA SHALL NOT BE INSTALLED IN A PIT BELOW GROUND LEVEL. SEMI–BURIED PITS MAY BE ACCEPTABLE IF THE RPBA IS INSTALLED ABOVE GROUND OR MAXIMUM FLOOD LEVEL IN A VAULT WITH AN APPROVED AIR GAP BETWEEN THE RELIEF VALVE PORT AND A BORE–SIGHTED DAYLIGHT DRAIN.

3. THE PROTECTIVE COVERING FOR THE RPBA MUST INCLUDE A DAYLIGHT DRAIN. THE DRAIN MUST BE ABLE TO BE BORE SIGHTED. IT MUST BE INSTALLED ABOVE GROUND OR MAXIMUM FLOOD LEVEL, WHICHEVER IS HIGHER. THE DRAIN MUST ALSO BE ABLE TO HANDLE THE VOLUME OF WATER THAT POTENTIALLY COULD BE DISCHARGED FROM THE RELIEF VALVE PORT.

4. RPBA MUST BE INSTALLED WITHIN A VAULT OR OTHER PROTECTIVE COVERING.

5. RPBA MUST BE PROTECTED FROM FREEZING.

6. AN RPBA INSTALLED MORE THAN FIVE (5) FEET ABOVE FLOOR LEVEL MUST HAVE A PLATFORM UNDER IT FOR THE TESTER OR MAINTENANCE PERSON TO STAND ON. THE PLATFORM MUST MEET ALL APPLICABLE SAFETY STANDARDS AND CODES.

7. WHEN THE RPBA IS LOCATED INSIDE A BUILDING IT SHALL BE INSTALLED IN A LOCATION WHERE BOTH THE OCCASIONAL SPITTING FROM THE RELIEF VALVE PORT AND THE POSSIBLE CONSTANT DISCHARGE DURING A FOULED CHECK VALVE SITUATION WILL NOT BE OBJECTIONABLE. AN APPROVED AIR GAP FUNNEL ASSEMBLY, EITHER PROVIDED BY THE MANUFACTURER OR FABRICATED FOR THE SPECIFIC INSTALLATION, MAY BE INSTALLED TO HANDLE THE OCCASIONAL SPITTING OF THE RELIEF VALVE DUE TO PRESSURE FLUCTUATIONS. A LINE FROM THIS FUNNEL ASSEMBLY MAY THEN BE RUN TO AN ADEQUATELY SIZED FLOOR DRAIN OF EQUAL OR GREATER SIZE. IT MUST BE EMPHASIZED THAT THE AIR GAP FUNNEL ASSEMBLY WILL HANDLE ONLY THE OCCASIONAL SPITTING AND WILL NOT CONTROL FLOW IN A CONTINUOUS RELIEF SITUATION.

8. PROVIDE A STRAINER WITH BLOWOUT TAPPING AHEAD OF THE RPBA.

9. INSTALLATION OF THESE APPROVED BACKFLOW ASSEMBLIES SHALL BE IN ACCORDANCE WITH THE "ACCEPTED PROCEDURE AND PRACTICE IN CROSS–CONNECTION CONTROL" MANUAL, OF THE CROSS–CONNECTION CONTROL COMMITTEE, PACIFIC N.W. SECTION OF THE A.W.W.A., MOST CURRENT EDITION.

10. BACKFLOW ASSEMBLIES MUST BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH LIST OF BACKFLOW ASSEMBLIES APPROVED FOR INSTALLATION IN WASHINGTON STATE, MOST CURRENT EDITION.

11. IMMEDIATELY UPON INSTALLATION OF AN APPROVED BACKFLOW ASSEMBLY (AND YEARLY THEREAFTER), THE ASSEMBLY SHALL BE TESTED BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, WHO SHALL PROMPTLY FORWARD THE TEST REPORT RESULTS TO THE DISTRICT.

12. VACANT.

13. ALL ELECTRICAL SHALL BE INSPECTED BY THE APPROPRIATE GOVERNING ELECTRICAL INSPECTOR.

14. RPBP MUST BE PURCHASED AND INSTALLED AS A UNIT. NO MODIFICATIONS TO ANY PART OF THE ASSEMBLY ARE ALLOWED.

15. PIPE SUPPORTS SHALL BE RUST–PROTECTED WITH ALUMINUM PAINT.

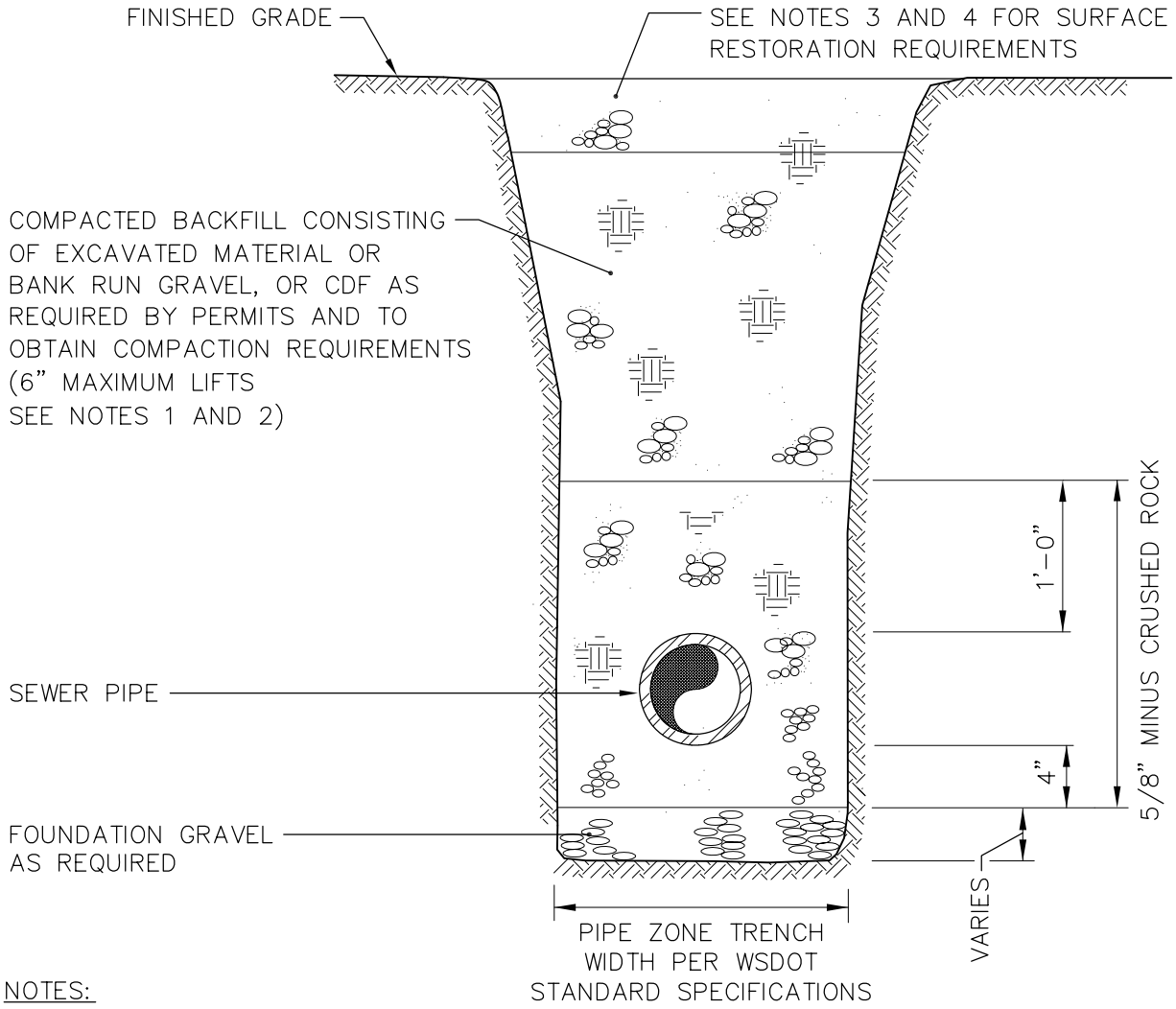
N.T.S.

REDUCED PRESSURE BACKFLOW ASSEMBLY INSTALLATION NOTES

Skyway water & sewer	APPROVED: _____ DISTRICT ENGINEER _____ DATE		DETAIL NUMBER: WA49
	SKYWAY WATER & SEWER DISTRICT	REVISED DATE: FEBRUARY 2005	

APPENDIX K – 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)
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



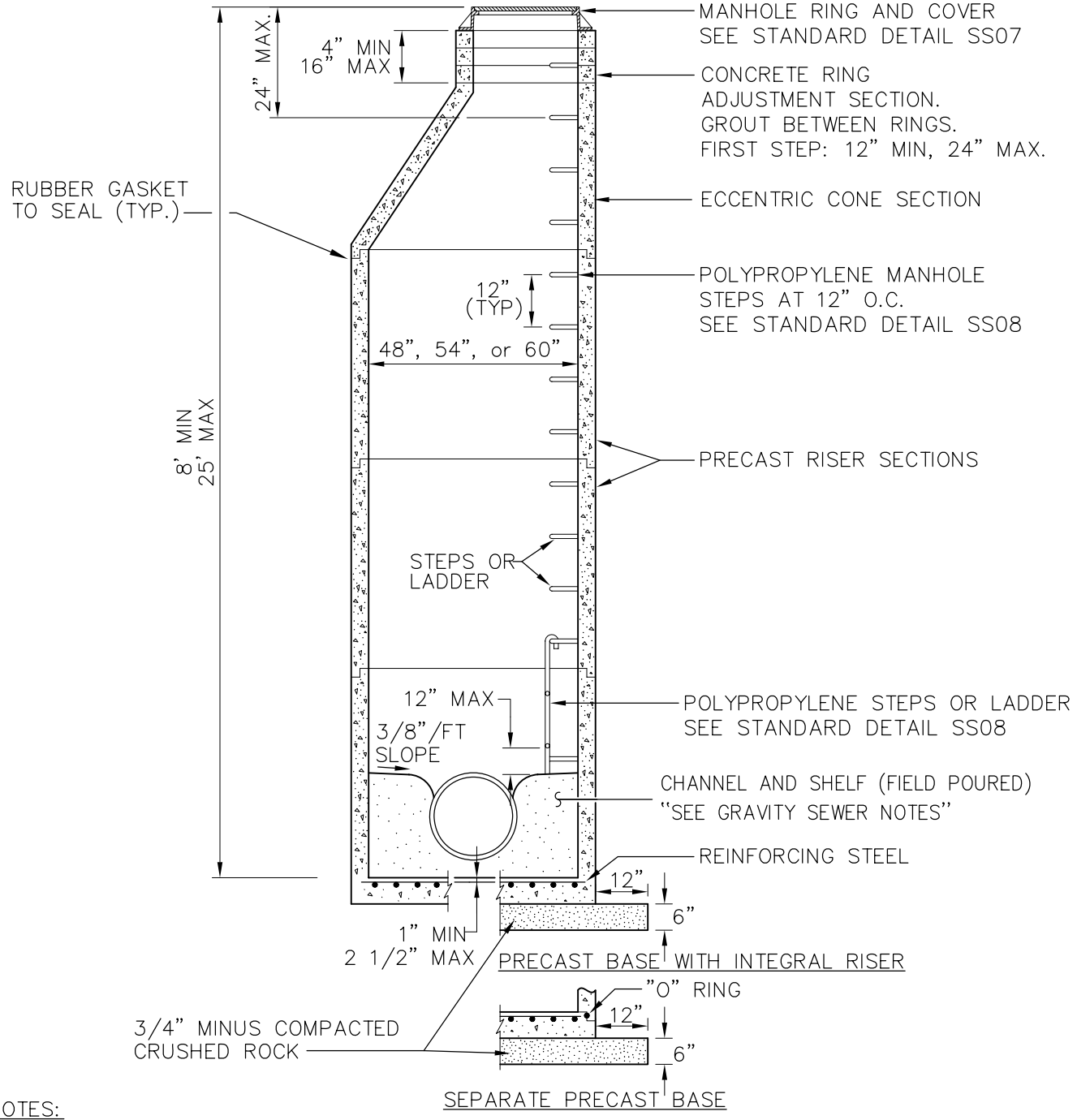
NOTES:

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.

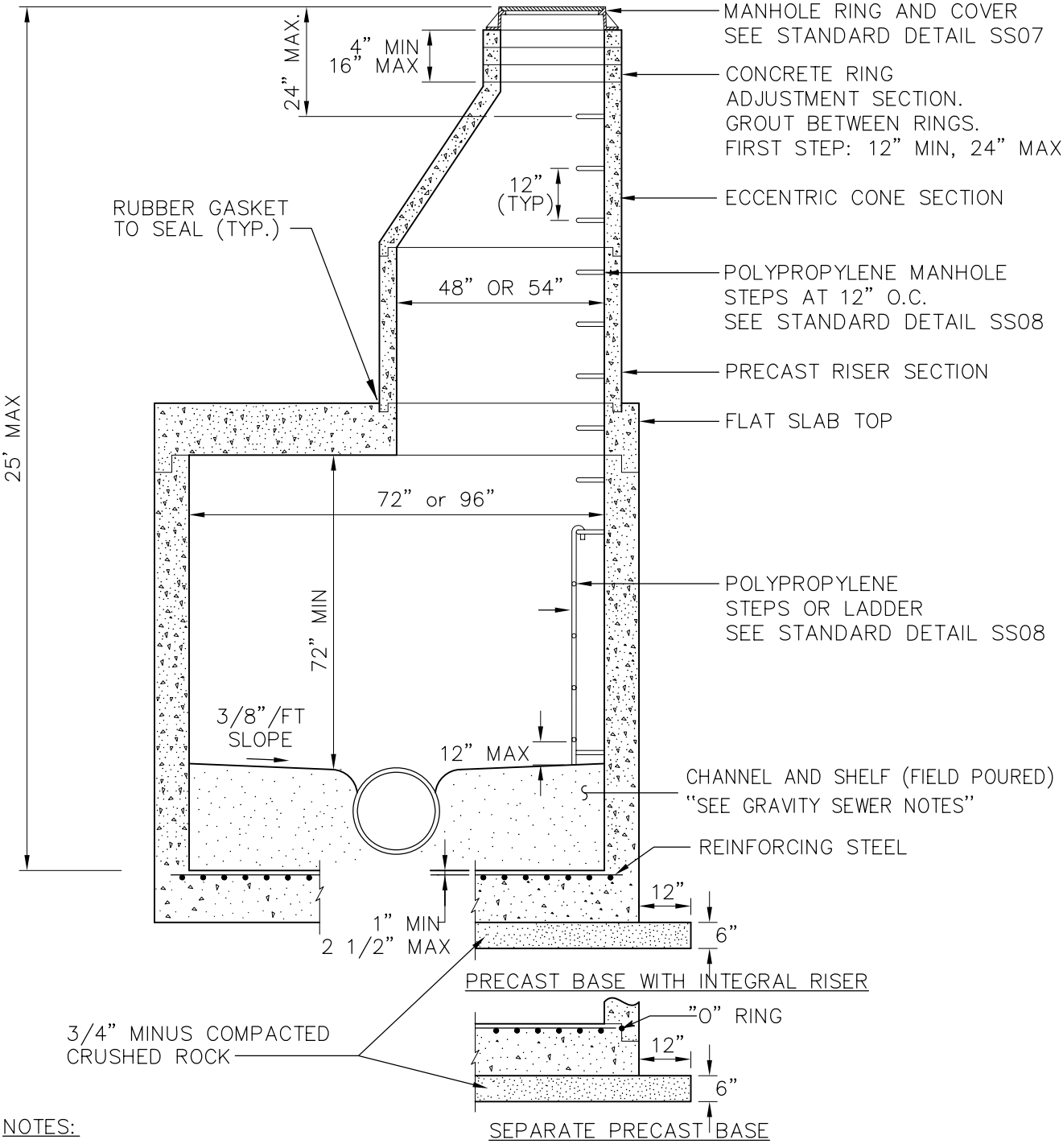
MANHOLE TYPE 1

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.

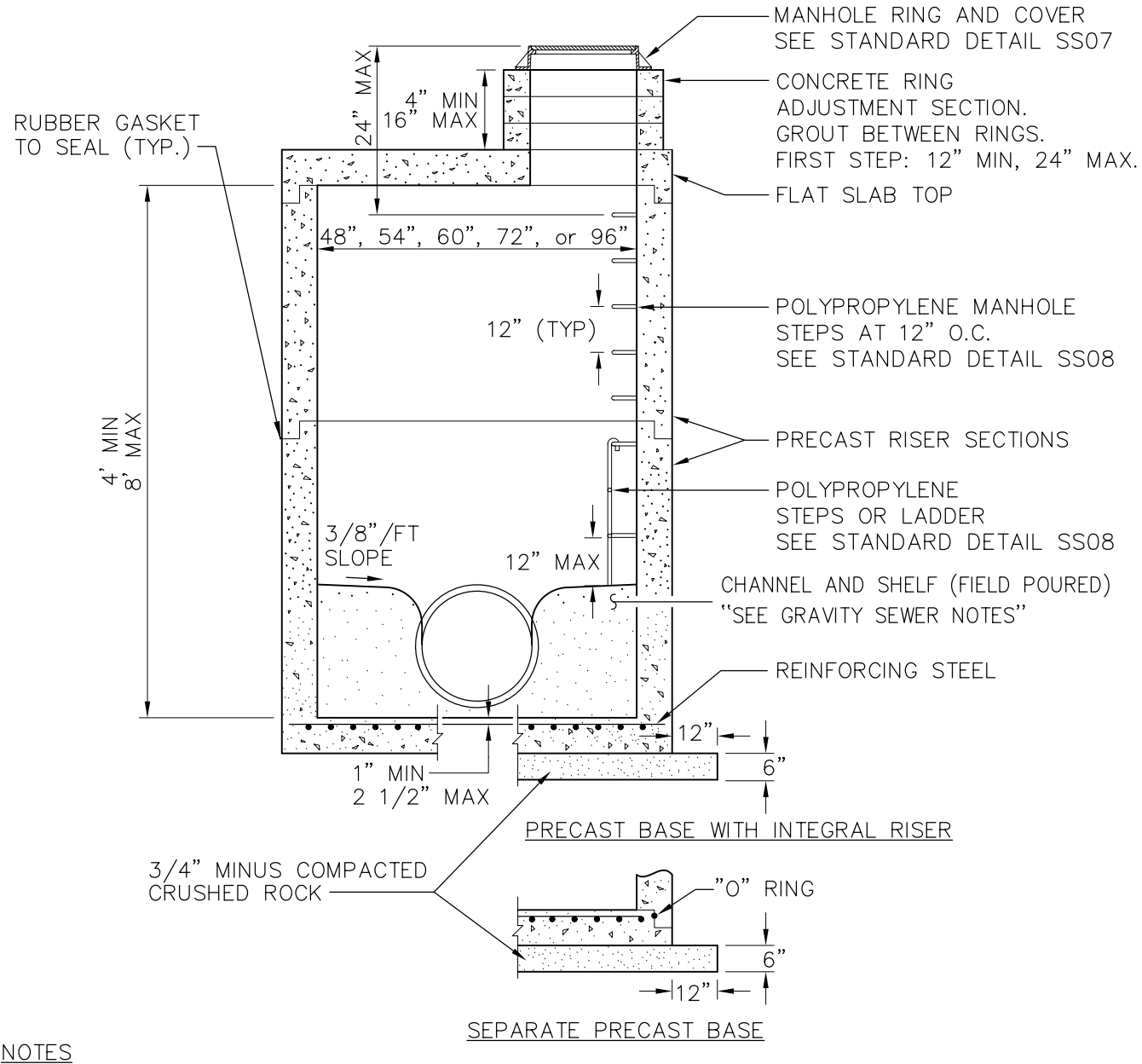
MANHOLE TYPE 2

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

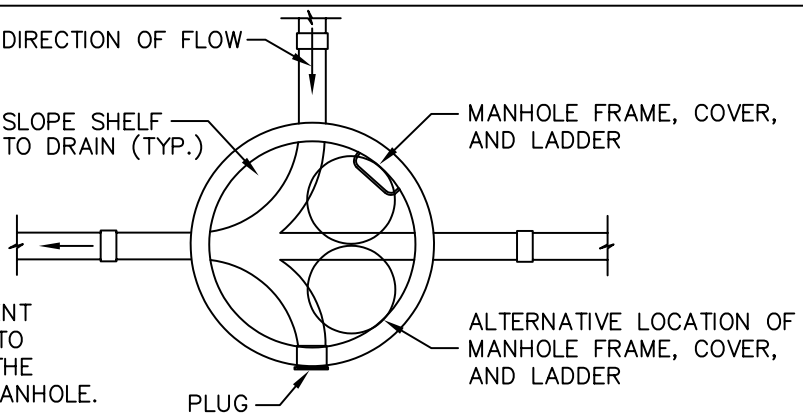
REVISED DATE: SEPTEMBER 2007

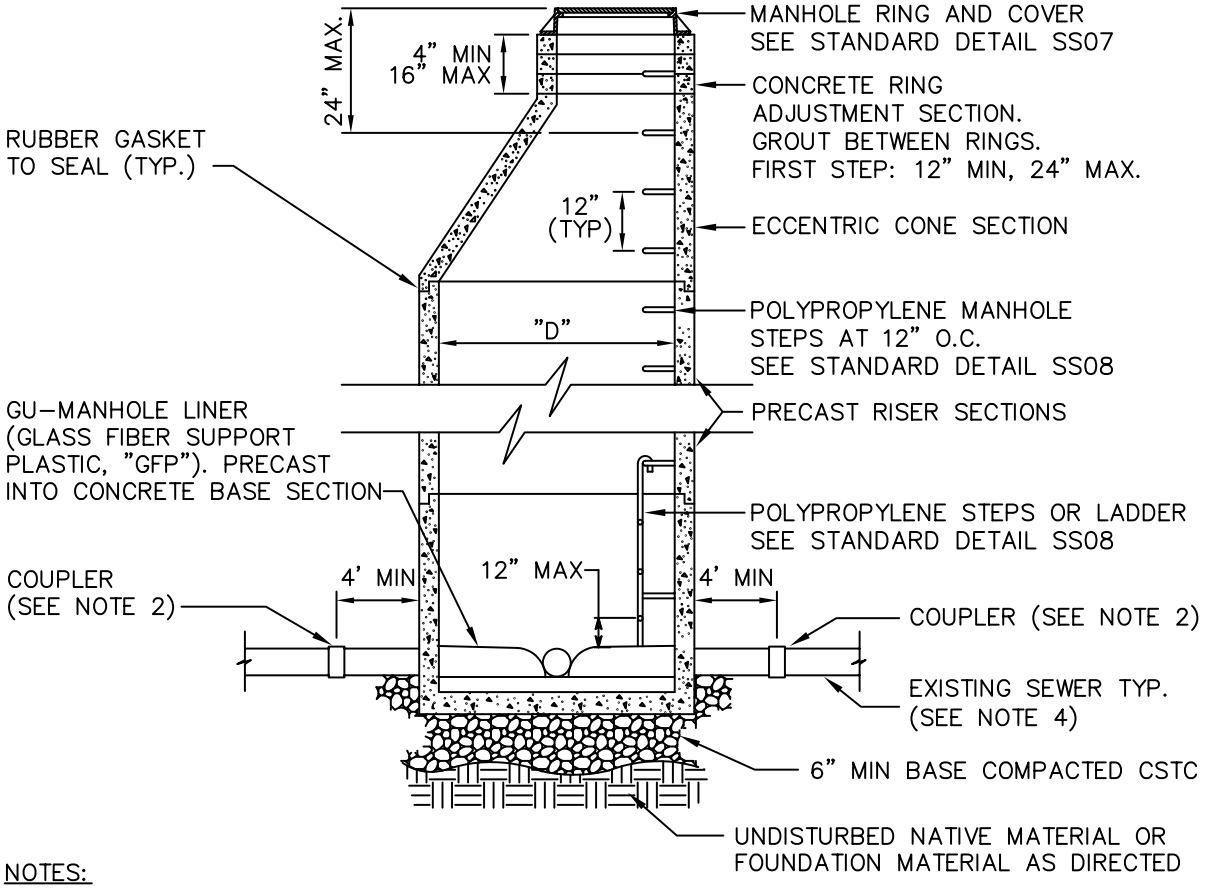
DETAIL NUMBER: SS04

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.

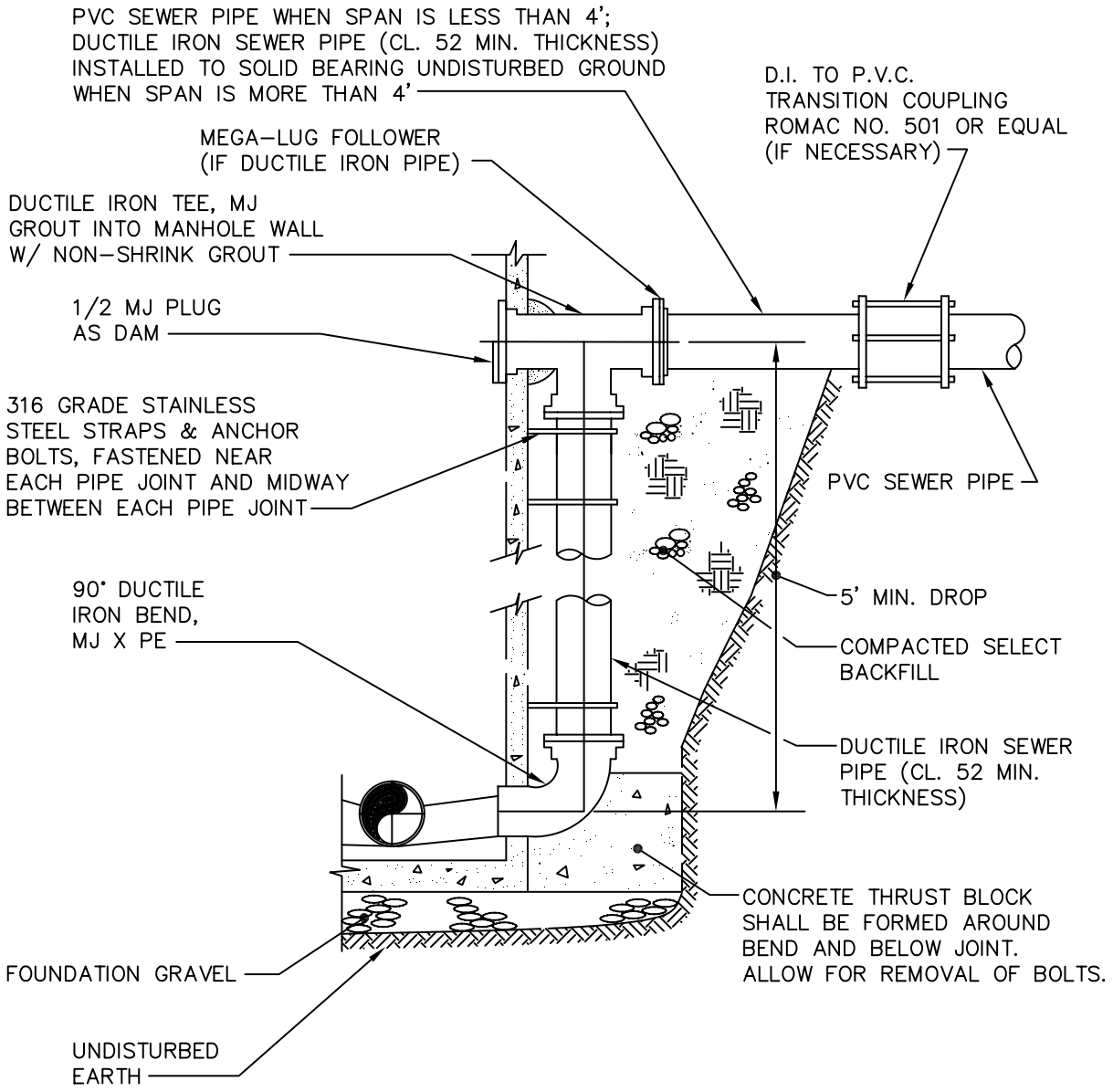
N.T.S.

CUT-IN MANHOLE

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT | REVISED DATE: FEBRUARY 2005

DETAIL NUMBER: SS05



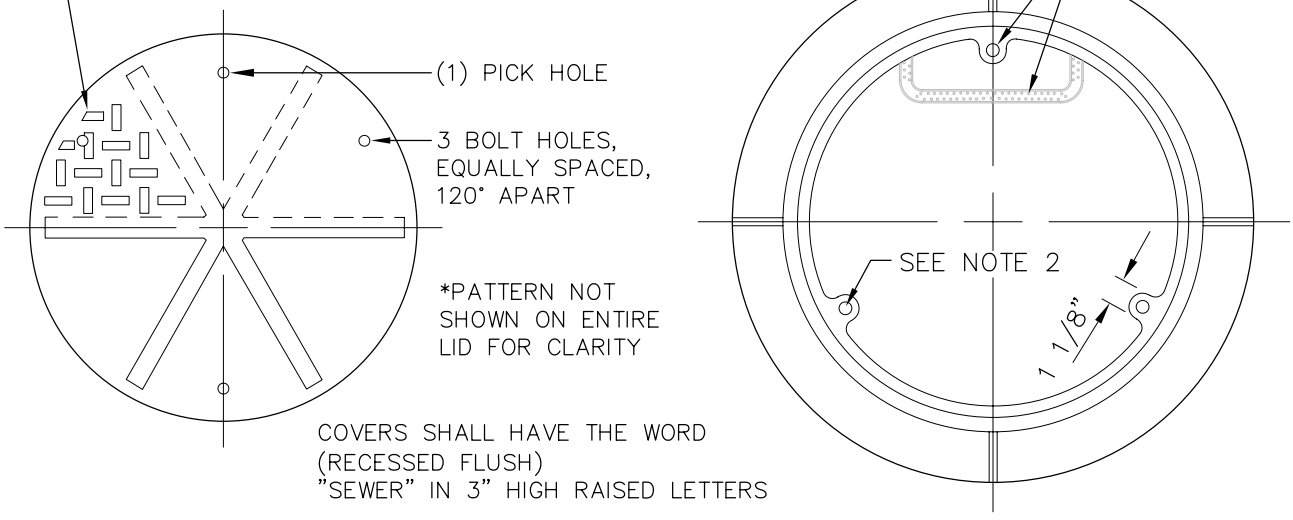
NOTES:

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.

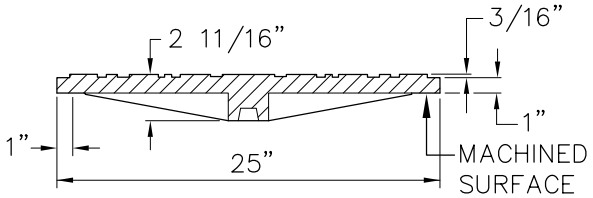
OUTSIDE DROP MANHOLE

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



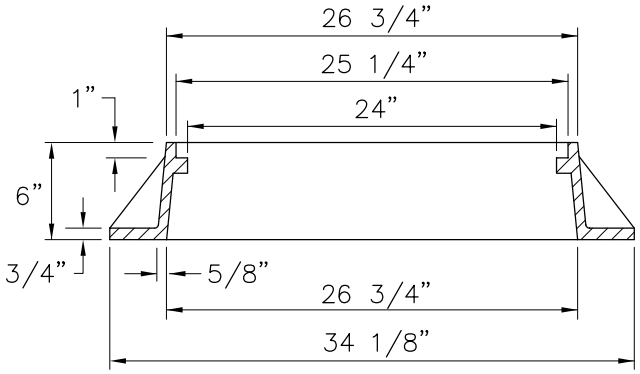
PLAN VIEW

PLAN VIEW

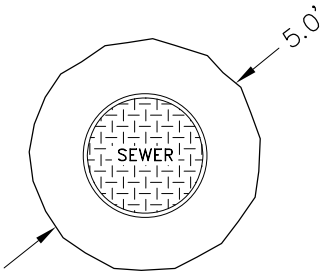


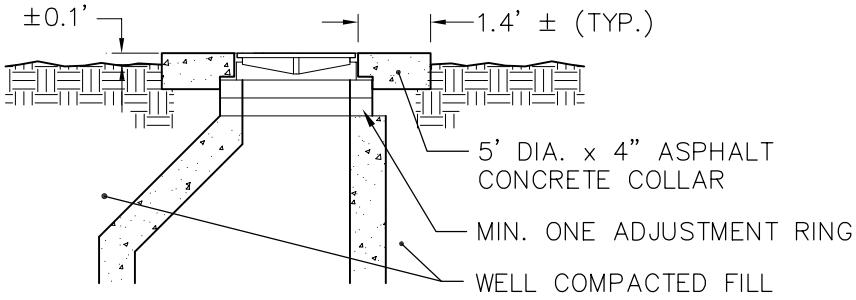
SECTION VIEW

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.

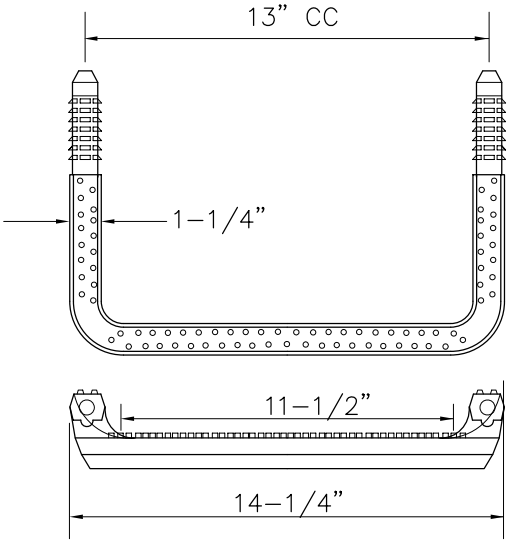
MANHOLE FRAME AND COVER

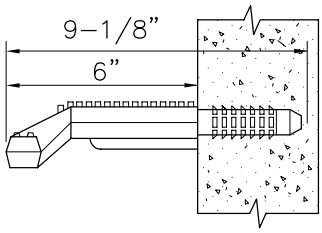
APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

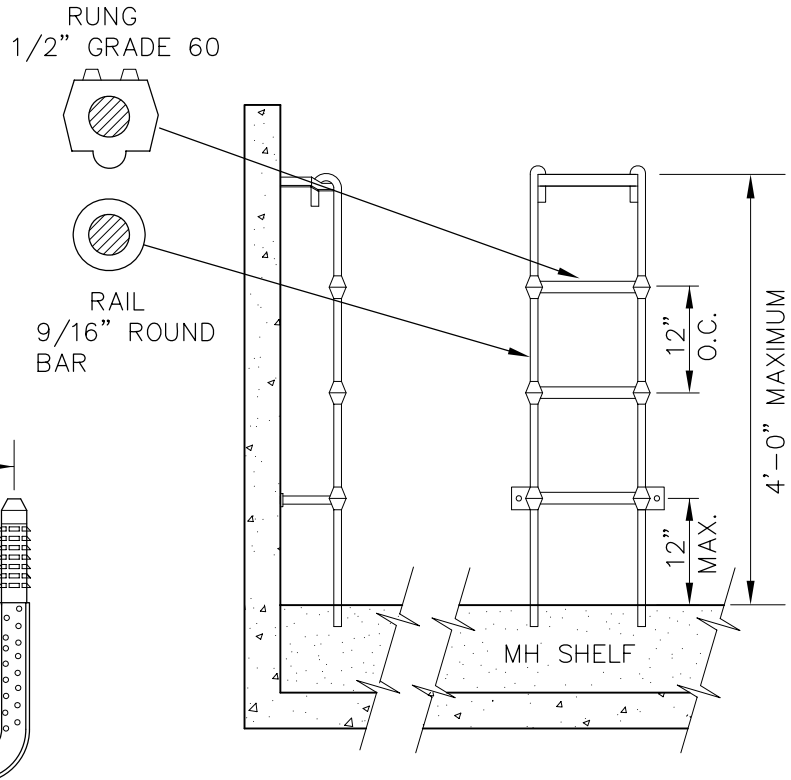
DETAIL NUMBER: SS07





POLYPROPYLENE STEP, LANE NO. P-13938 OR EQUAL

POLYPROPYLENE MANHOLE STEPS



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 PERMANENTLY FASTENED TO THE MANHOLE BY BOLTING OR EMBEDDING THE BOTTOM OF THE LADDER IN THE CONCRETE SHELF.

N.T.S.

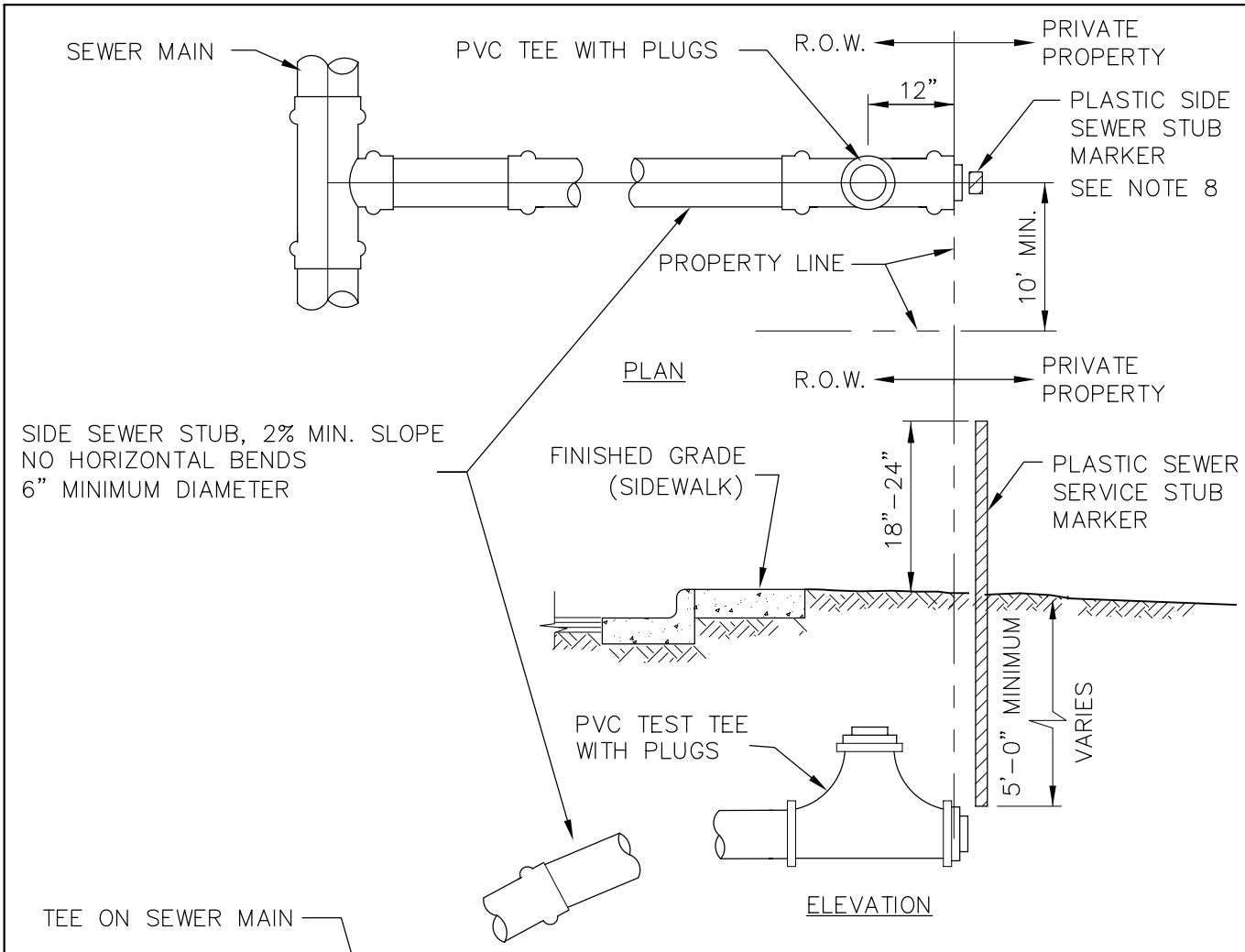
POLYPROPYLENE LADDER AND MANHOLE STEPS

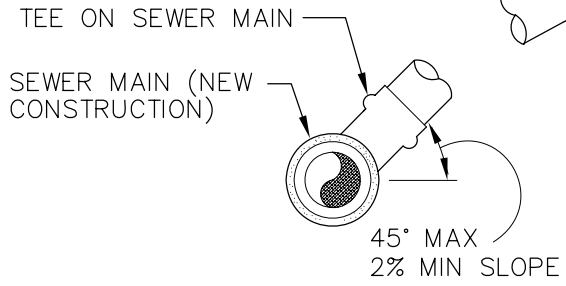
APPROVED: _____ DISTRICT ENGINEER _____ DATE

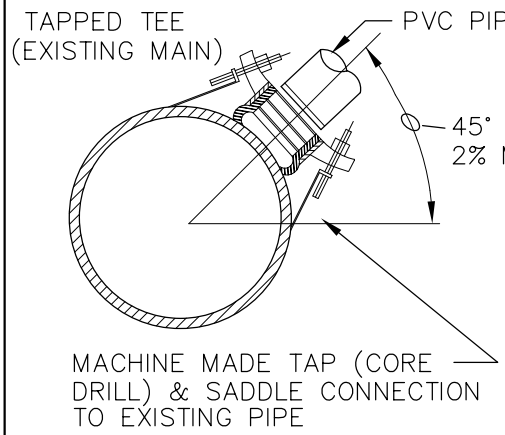
SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

DETAIL NUMBER: SS08







NOTES:

1. INSERT-A-TEE SADDLE FOR CONCRETE AND PVC PIPE.
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 THE SAME MATERIAL AS THE MAIN LINE SEWER.
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.

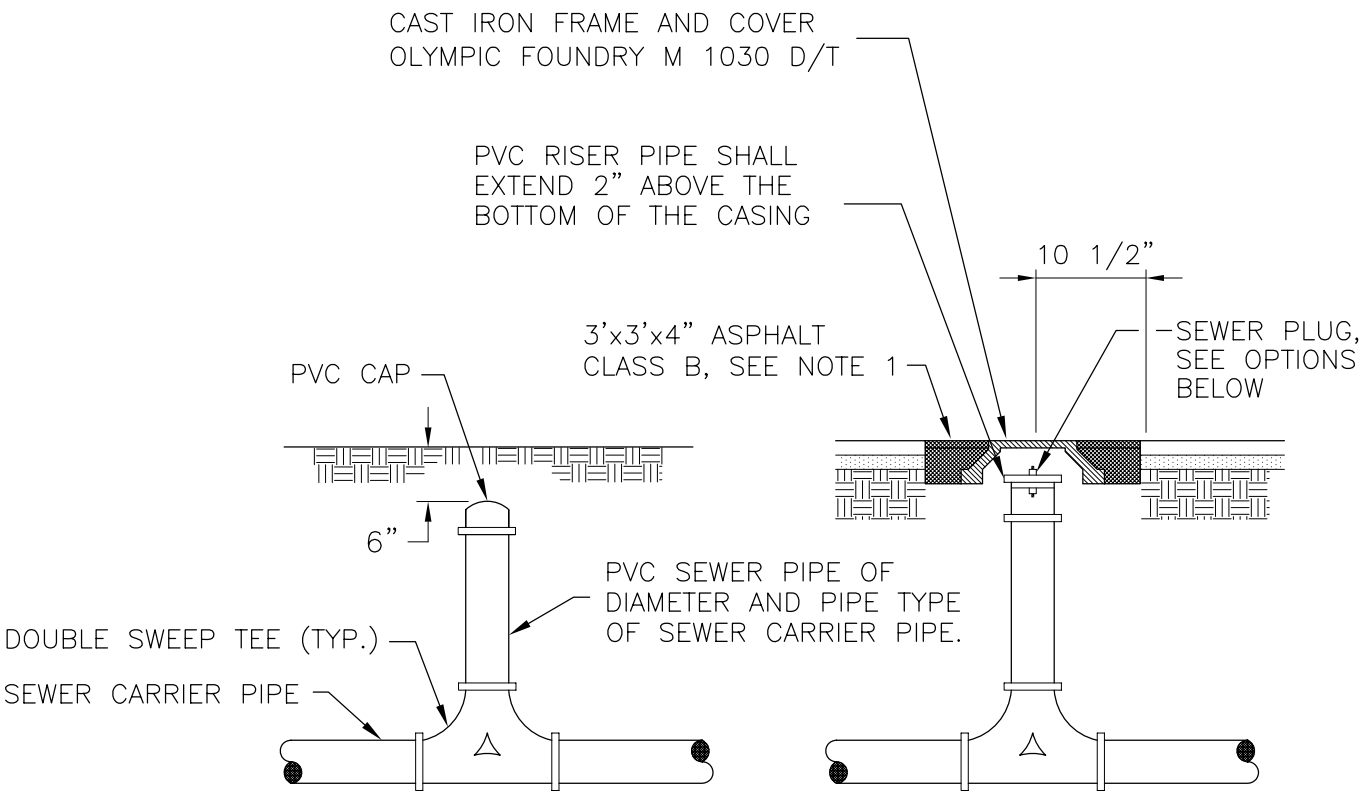
SIDE SEWER STUB

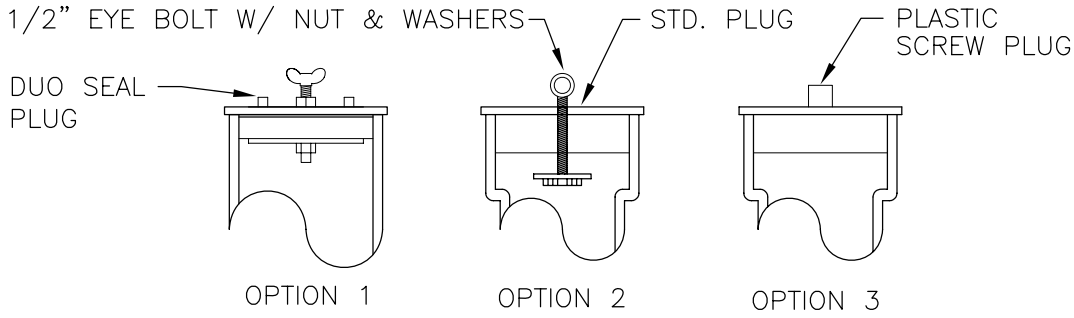
APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

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.

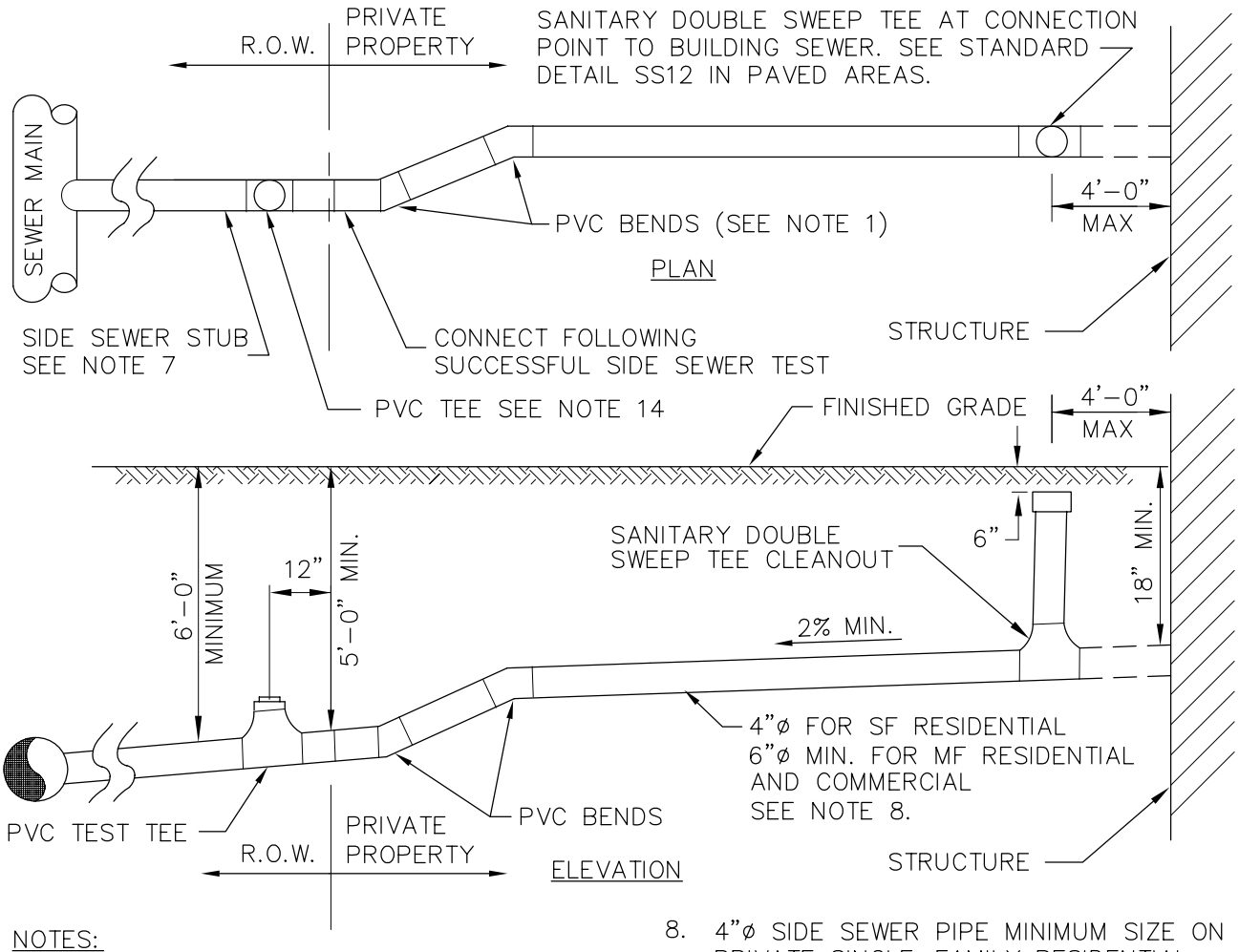
VERTICAL SEWER CLEANOUT

APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

REVISED DATE: SEPTEMBER 2007

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

Skyway water & sewer

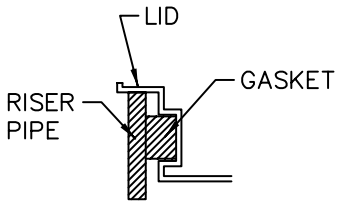
APPROVED: _____ DISTRICT ENGINEER _____ DATE

SKYWAY WATER & SEWER DISTRICT

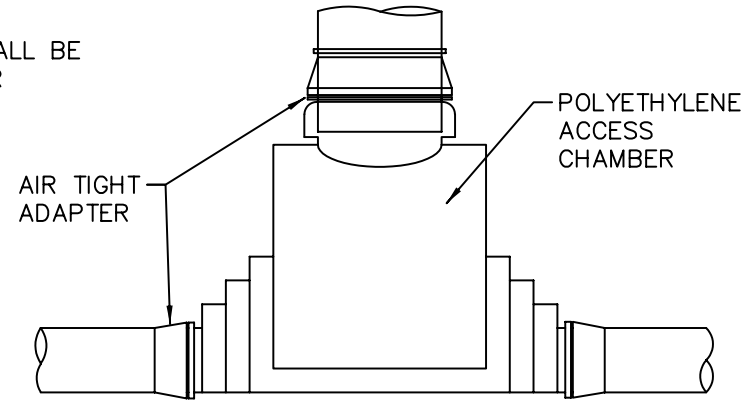
REVISED DATE: SEPTEMBER 2007

DETAIL NUMBER: SS13

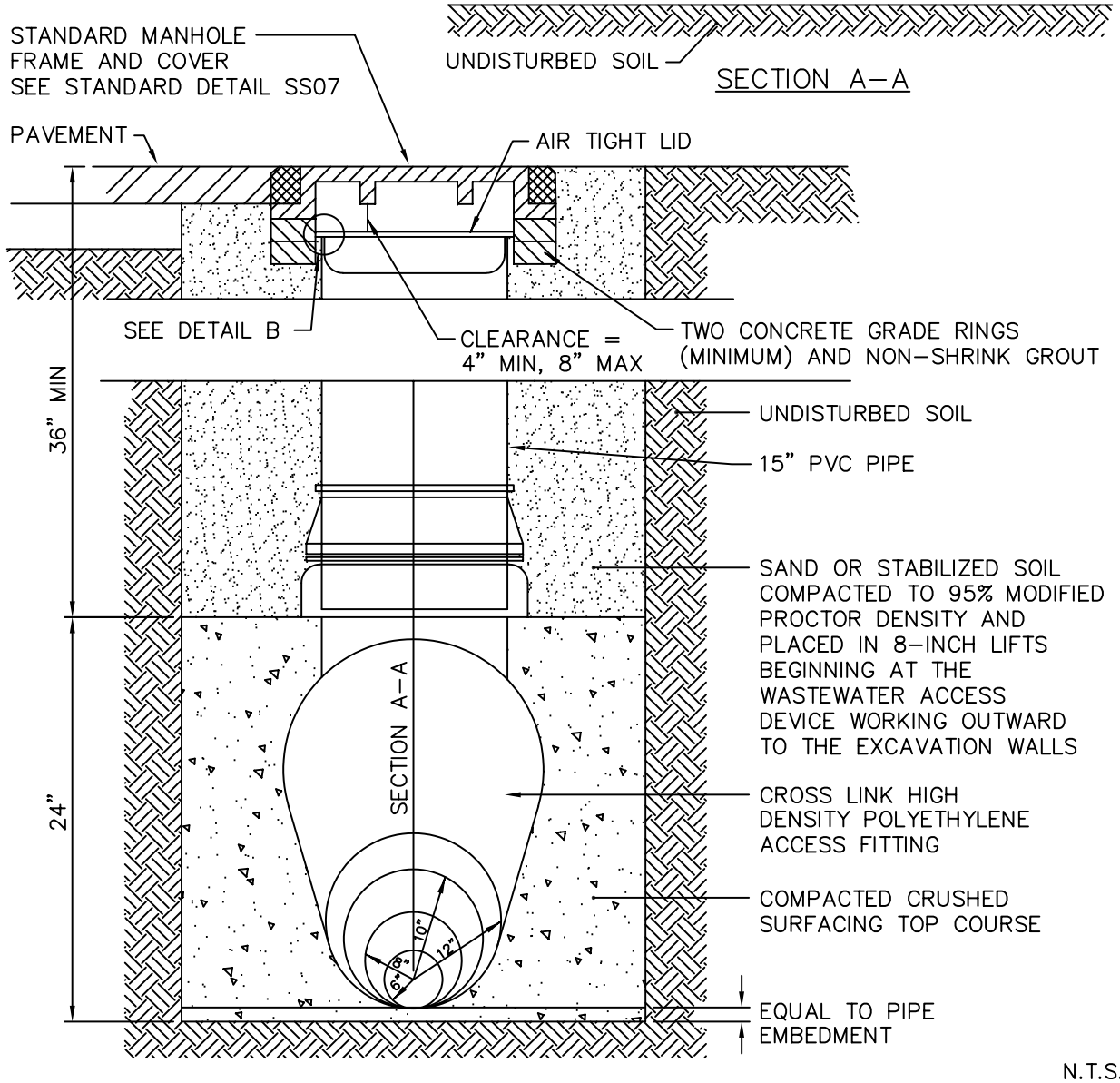
NOTES:
1. WASTEWATER ACCESS DEVICE SHALL BE MANUFACTURED BY UPONOR ETI, OR APPROVED EQUIVALENT.



DETAIL B
N.T.S.



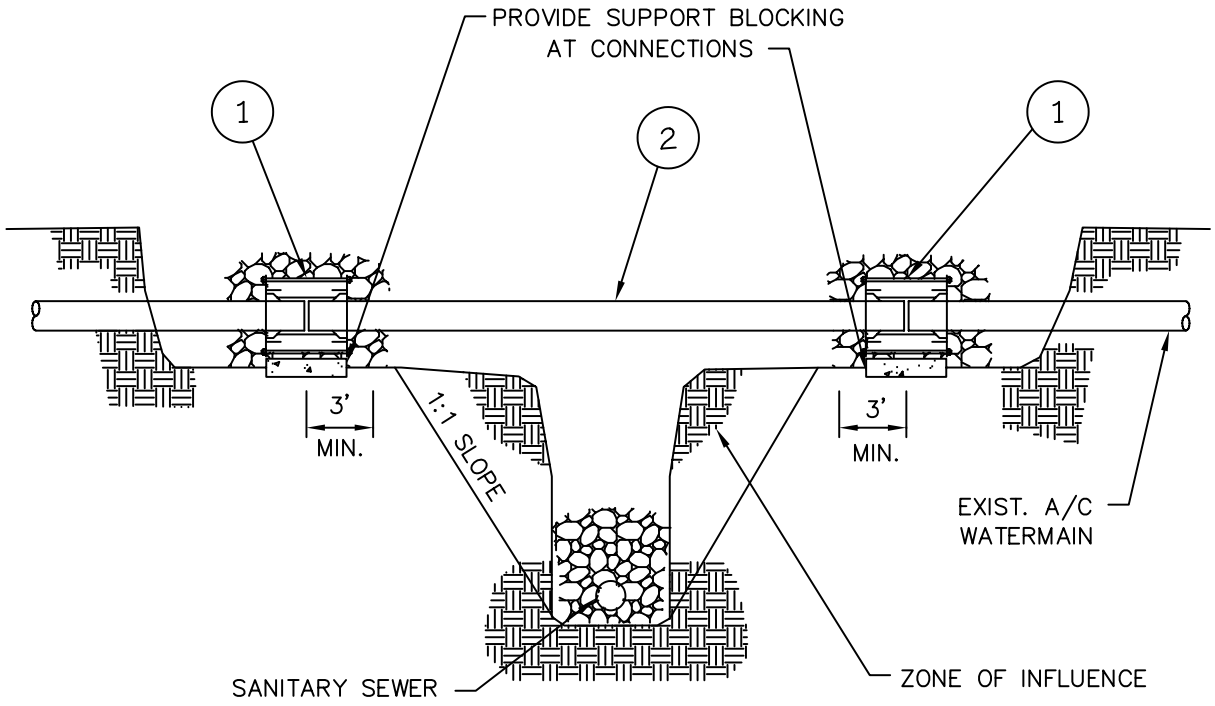
SECTION A–A



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



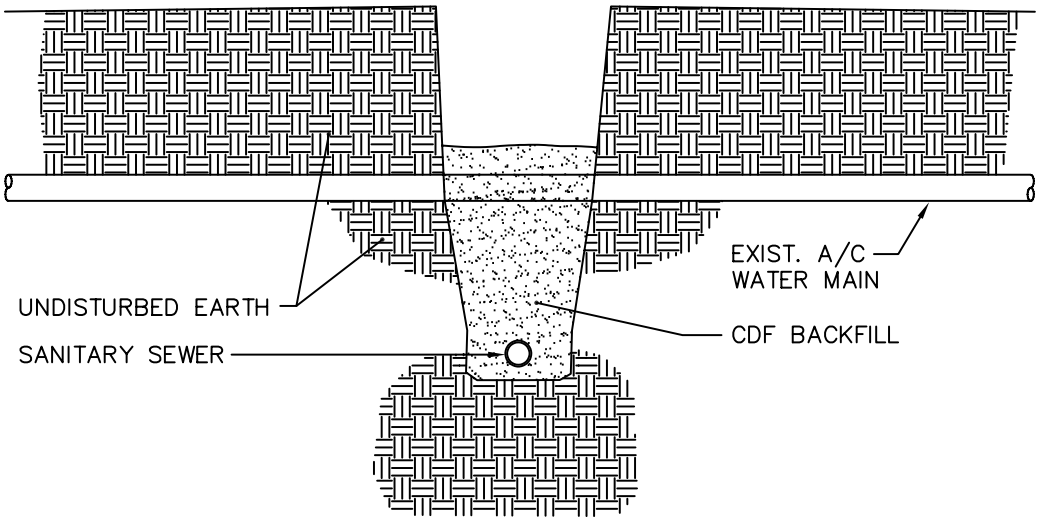
NOTES:

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



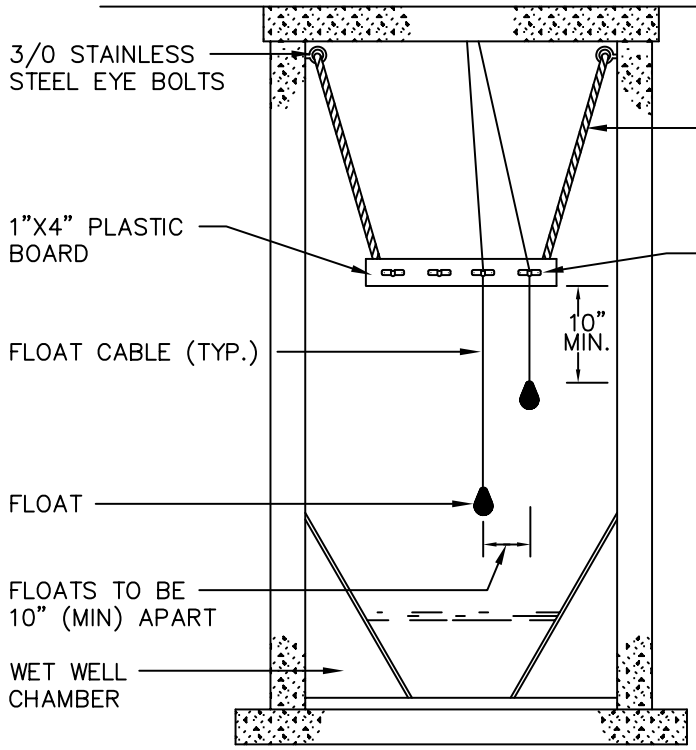
NOTES:

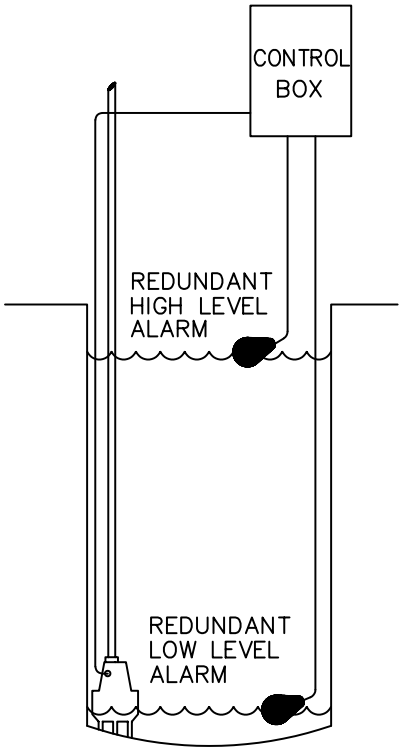
1. INSTALL CDF 1' ABOVE EXISTING A/C WATER MAIN.
2. INSTALL CDF 3' BELOW PIPE (OR GREATER IF NECESSARY FOR SPECIFIED COMPACTION REQUIREMENTS).
3. CDF SHALL EXTEND LONGITUDINALLY ALONG THE SANITARY SEWER MAIN AT A 1:1 SIDE SLOPE FROM 1' BEYOND THE CENTERLINE OF THE A/C WATER MAIN TO THE SEWER MAIN TRENCH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

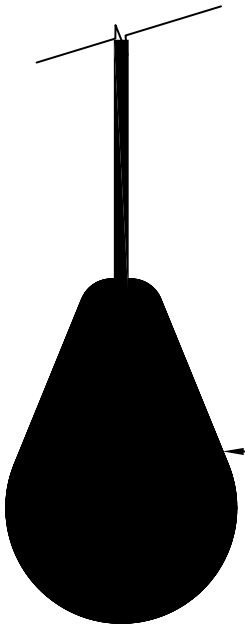




MULTIPLE FLOAT SYSTEM

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.

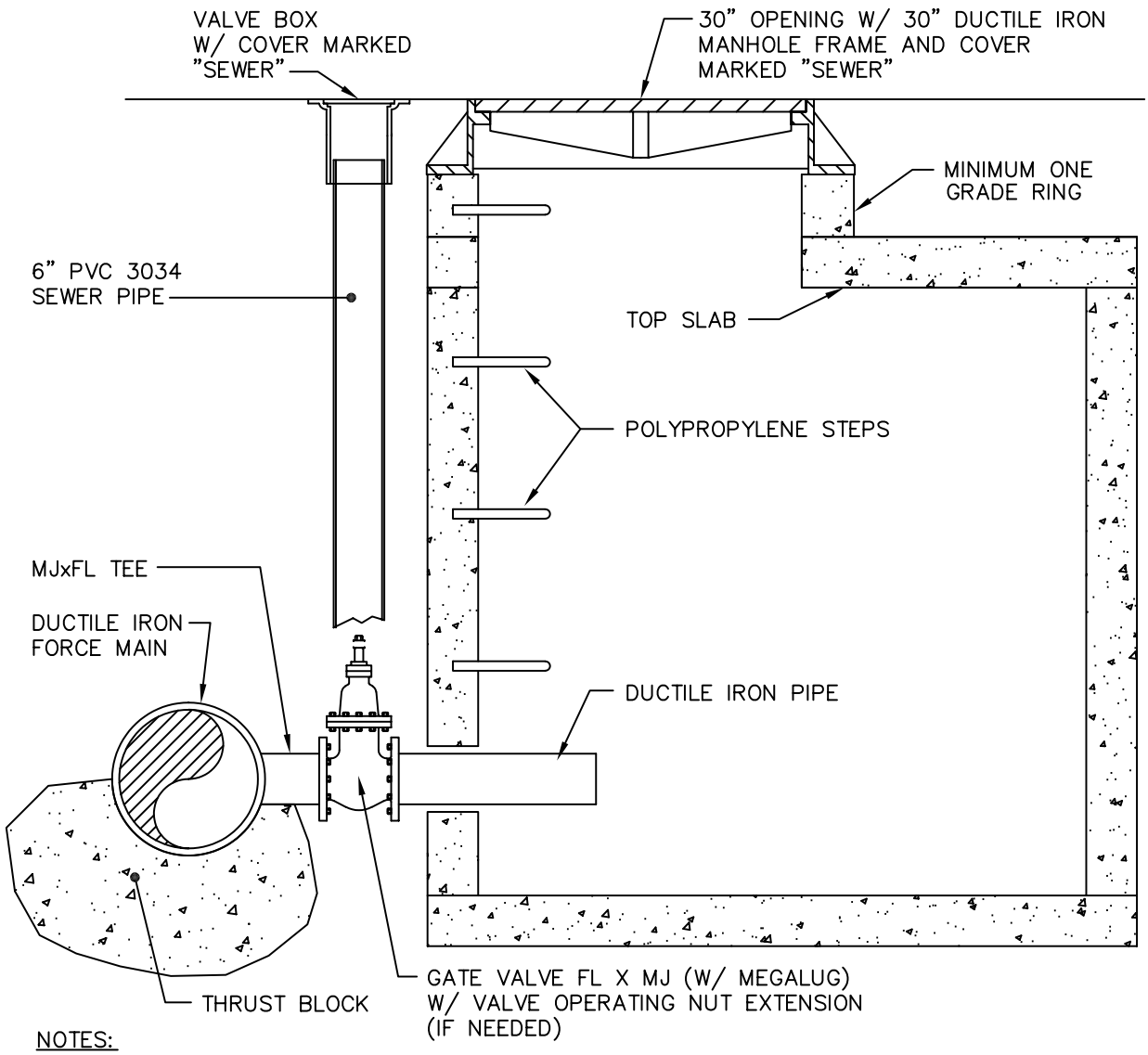


FLOAT

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.

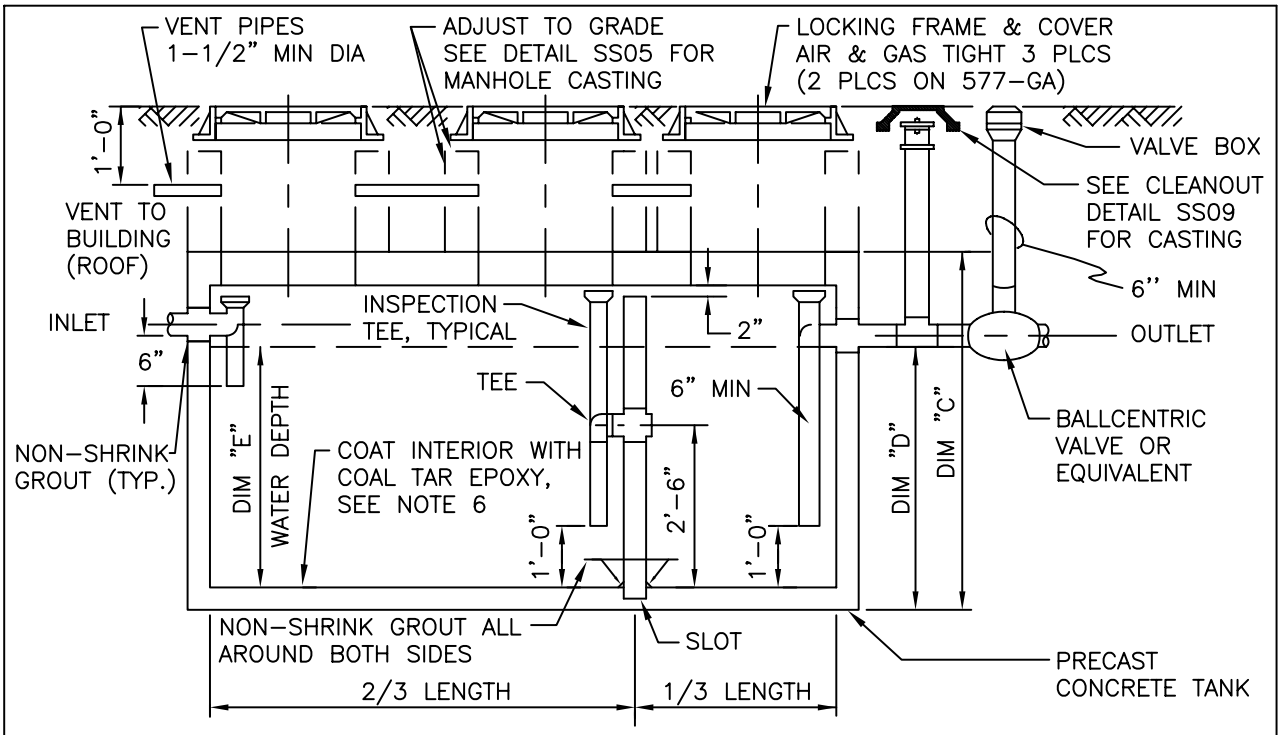
3. DUCTILE IRON PIPE AND FITTINGS SHALL BE PROVIDED WITH AN INTERIOR COATING/LINING OF POLYETHYLENE MEETING THE REQUIREMENTS OF ASTM D1248 OR PROTECTO 401 CERAMIC EPOXY, 40 MIL MINIMUM THICKNESS. A BITUMINOUS COATING SHALL BE APPLIED TO THE PIPE AND/OR FITTING'S EXTERIOR.

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	