City of White Salmon

Developer Standards for the Construction and Acceptance of Water and Sewerage Facilities

Adopted September 5, 2018

ADOPTION

The Developer Standards for the construction and acceptance of water and sewerage facilities in the City of White Salmon were adopted by the City Council at a regular public meeting on September 5, 2018. These standards may be revised and modified by the Public Works Director from time to time without further Council approval.

NOTICE

The standards herein are presented to inform the Developer/Contractor of the general minimum requirements for construction and acceptance of Water and Sewer facilities within the City of White Salmon (the "City").

The City of White Salmon does not assume responsibility for keeping this material current, and does not replace or supersede state or federal law. The City should be consulted in case of doubt regarding the applicability of any standards or item(s) presented herein. Some of the information presented herein is based on governmental codes and ordinances, and industry standards, and is subject to change in the event that the governing laws, codes, ordinances or standards are changed. The City is not responsible for notifying developers, contractors, or other individuals of such changes as they may be adopted.

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CITY OF WHITE SALMON EXTENSION CHECKLIST

NAME OF DEVELOPMENT _____ EXT.# _____

DATE _____ OWNER'S NAME _____
PHONE _____ EMAIL _____
ADDRESS _____

ENGINEER _____ PHONE _____
State License No. _____ Good standing? Yes ___ No ____
CONTRACTOR _____ PHONE _____
State License No. _____ Good standing? Yes ___ No ____

Date	Pre-Construction
_____	Sign Pre-application Declaration
_____	Provide Fire Flow Requirements for Commercial, Industrial & MF.
_____	Fill out and return Industrial Pretreatment Program Survey
_____	Reimbursement Requested? Y/N
_____	Deposit Received by City $_____
_____	Developer Extension Agreement signed by Mayor
_____	Pre-Design Meeting
_____	Preliminary Plan Review by City
_____	Council Authorized Water/Sewer Plan Approval
_____	Klickitat County/City/State Right-of-Way Use Permit
_____	Other Permits, Specify _____
_____	Certificate of Insurance (Provided by Contractor Prior to Pre-Con)
_____	Copy of Contractor's State License Prior to Pre-Con
_____	Pre-Construction Meeting
_____	Copy of Preliminary Plat as prepared for submittal

	WATER
_____	Approval of Materials to be used
_____	System Pressure Tested
_____	Successful Bacteriological Testing Performed
_____	System Put Online
_____	Punch List Sent to Owner

SEWER

_____ Approval of Material to be used
_____ System Pressure Tested
_____ System Flushed
_____ System T.V.'ed, Mandrel Pulled, Line Plugs Pulled
_____ Punch List Sent to Owner

Post Construction

_____ As-Builts Reviewed and Red-Lines sent to Developer's Engineer
_____ Red-Lines Returned to City – As-Builts OK
_____ Mylar, Electronic Copy and 3 Sets of Prints of As-Builts to City Hall
_____ Itemized Cost of System Forms for Water/Sewer
_____ Copy of Recorded Plat Received
_____ All Fees Paid
_____ Final Punch List Completed
_____ 2-Year Maintenance Bond Received
_____ Project Accepted as Complete by City
_____ Declaration of Construction Sent to Dept. of Ecology (Sewer Only)
_____ Recorded Onsite Easements , including Easement Map
_____ Recorded Offsite Easements, including Easement Map
_____ Project Accepted by Council for O&M.
_____ Water and/or Sewer Service Available to Project

DESIGN CRITERIA & PLAN SUBMITTAL SUMMARY

(Adjustments may be made by the City on site specific projects)

The following must be provided:

1. General

- **a.** Cover sheet showing entire property and location of improvements.
- **b.** Location of streets, right-of-ways, easements (easements to be labeled, on the plans, "to The City of White Salmon"), property lines, existing and proposed utilities and improvements (Design plans for water and sewer system must be on separate sheets).
- **c.** Copies of all existing easement deeds upon which Developer is relying.
- **d.** Stationing or pipe lengths for the site area and on all improvements to be constructed. Stationing, from the nearest downstream manhole, for all proposed sewer facilities.
- **e.** Existing and proposed grades of streets, easements and areas of improvement.
- **f.** Match lines and title blocks for each sheet.
- **g.** Maximum horizontal scale of 1"=30'; Vertical Scale: 1"=5'; (or as otherwise approved by the City). Vertical Datum shall be NAVD 88.
- **h.** Sewers to be located below potable water lines, with 18 inches of vertical separation and with a minimum 10 foot horizontal separation from parallel water lines. Crossing angles shall be 45 degrees or greater. Unusual or special conditions are addressed in accordance with the Department of Ecology and the Department of Health criteria.
- **i.** Permanent access for City service vehicles shall be provided at all manholes. Adequate separation shall be provided between sewers and parallel utilities to allow for future access for repair. Vertical separation of 12 inches shall be provided between all crossing utilities.
- **j.** Water system plans are to be separate from other utility plans, but all other utilities are to be shown with the water system portions highlighted.
- **k.** Sanitary sewer plans are to be separate from other utility plans, but all other utilities are to be shown with the sewer system portions highlighted.
- **l.** Construction plans shall be signed & dated by a Washington State licensed engineer.
- **m.** Standard notes for water and sewer system construction shall be included with construction plans.
- **n.** Approval block for City signatures shall be included on all sheets of the construction plans.

o. Standard details for water and sewer system construction shall be included with construction plans.

p. A Fire Flow Analysis shall be performed on all commercial, multi-family, industrial or any project identified by the City to determine available water flow and pressure. The Developer shall deposit funds prior to the analysis being performed. The City's consulting engineer shall perform all Fire Flow Analysis.

2. WATER

a. Water mains to be located 10 feet northerly or easterly of street centerline (or as otherwise approved by the City).

b. Operations system pressure range to be between 35 and 185 psi.

c. Minimum system pressures to be 30 psi under maximum hour demand conditions and 20 psi under maximum day demands plus fire flow demands.

d. Water mains to be 8 inch minimum pipe diameter Ductile Iron Pipe or C-900 PVC Pipe (or as otherwise approved by the City) and shall be installed with Metallic Locate Tape and Tracer Wire (PVC only) as per plans. Larger pipe diameters may be required to deliver water needed to comply with Item C above.

e. Maximum design velocities in mainline to be 8 feet per second (8 fps) under maximum day demand plus fire flow demand.

f. Water mains to be designed with the following minimum cover:

- **i.** 8 inch diameter – 3'-6"
- **ii.** 12 inch & larger diameter – 4'-0"
- **iii.** Water mains in easements – 5'-0" (Unless otherwise approved by the City.)

g. Whenever possible, loop water mains to minimize occurrence of dead end lines. Provide fire hydrant or blow-off assembly at dead end mains for flushing purposes. Sample stations shall be installed where indicated by the City.

h. Pipes connecting fire hydrants to be Ductile Iron and at least 6 inches in diameter. The maximum length of 6 inch pipe between the main and fire hydrant shall not exceed 50 feet and shall be installed with restrained joints.

i. Only one fire hydrant to be installed on any dead end 8 inch main.

j. Fire hydrant spacing in single-family residential areas are not to exceed 500 feet. Hydrant spacing in commercial, industrial and multi-family residential areas are not to exceed 300 feet.

k. Maintain a maximum distance between hydrants and the building portion of any lot for residential buildings of 300 feet measured along an access roadway or driveway.

l. For all other occupancy type buildings, maintain a maximum distance between hydrants and the buildable portion of any lot of 150 feet measured along an access roadway or driveway.

m. For commercial buildings, the minimum number of hydrants required is determined by dividing the required fire flow in gpm by 1,200. The hydrant must be located no closer than 50 feet to any served building and at no greater distance than 300 feet from any portion thereof. In addition, a hydrant must be located within 150 feet of a sprinkler standpipe or Fire Department Connection (FDC). The City shall determine if hydrants located across streets from construction site can be included for fire protection.

n. Fire line services shall have a State approved Double Check Detector Backflow Prevention Assembly, at a minimum, installed in a utility vault at the ROW/Property line with a 6 inch PVC gravity drain to storm or daylight.

o. Valves are to be installed on each leg of all tees and crosses and at intervals of 500 feet or less in commercial or multi-family areas and 800 feet or less in single family areas (or as otherwise approved by the City).

p. Valves to be installed on each side of the hydrant tee at fire hydrants designated by the City.

q. Valves to be installed on the water main at each end of mains located in easements.

r. Combination air and vacuum relief valve assemblies to be located at all high points in the system (or as otherwise required by the City).

s. All dead end mains to be terminated with line size tees by 6 inch flanged tees, thrust blocks and blow-off assembly.

t. All pipeline deflections to be designed in accordance with the pipe manufacturer's recommendations.

u. Thrust blocks and/or anchor blocks to be provided for all fittings and bends.

v. Provide polyethylene encased restrained joint pipe and fittings within all easements and in site sensitive areas identified by Developer or City.

w. All residential lots to be served with a minimum of a single 1 inch service line between the main and meter. All service lines shall be installed with Metallic Locate Tape and Tracer Wire as per approved plans.

x. Individual structures connected to the water system, including multiple structures on the same lot or multi family structures that have the potential to be sold as townhomes, shall have a minimum of one water service each.

y. Provide a pressure reducing valve station at each crossing of the City's pressure zone lines, consisting of two PRV Valves and a pressure relief valve.

z. All commercial, multi-family, industrial, fire and irrigation services shall include a DOH approved backflow preventer located immediately behind and on the property side of the water service box.

3. SEWER

a. Sewer mains to be located 5 feet southerly or westerly of street centerline (or as otherwise approved by the City). Pipe material, length, diameter and slope are designated on each run in plan and profile views. (Pipe information may be omitted on the plan view when the plan and profile are located on the same sheet).

b. Sewer mains to be designed with no less than the following minimum grade:

- **i.** 8 inch gravity main – 0.75%
- **ii.** 6 inch side sewer – 2.0%
- **iii.** 8 inch gravity dead end – 1.0%

Slopes of less than 0.75% but greater than 0.5% may be considered, at the discretion of the City, in certain situations/areas. Steeper slopes may be required depending on topography and tributary flows (at the discretion of the City).

c. All sewer mains to have a minimum cover of 3 feet. (Side sewer laterals in public right-of-ways to have a minimum 5 feet of cover at the ROW line).

d. Sewer mains to be of material noted below:

- **i.** PVC Pipe: 5' – 18' of cover
- **ii.** Polyethylene or Epoxy Lined DI Pipe or Equal: 3' – 5' cover.
- **iii.** Polyethylene or Epoxy Lined DI Pipe or Equal: 18' or greater.
- **iv.** Polyethylene or Epoxy Lined DI Pipe or Equal: For Force Mains.

e. Sewer mains on 18% slope or greater to be anchored securely with concrete anchors or equal.

- **i.** 18 to 35% - 36 feet on center
- **ii.** 35 to 50% - 24 feet on center
- **iii.** Greater than 50% - 16 feet on center

f. Side sewer laterals to be located 5 feet to 10 feet from the lot corner on the lower side of the lot (or as otherwise approved by the City). Manhole required 10 feet into property on all side sewers not serving single family lots. Stationing shall be provided from the nearest downstream manhole.

g. Side sewer lateral invert elevations and minimum house floor elevations to be shown on the construction plans for all critical lots.

h. Manhole spacing not to exceed 400 feet (or as approved by the City).

i. Manholes (6 foot minimum depth) are to be located at all changes in grade, pipe alignment, pipe intersections, termination points and 10 feet into property on all side sewers other than single family. Clean-outs are not acceptable as a substitute.

j. Manholes in excess of 20 feet in depth to be 54 inch diameter.

k. Manholes are not to be located in low points of vertical curves or curb flow lines (gutter sections).

l. Manholes shall have a minimum 0.10 foot drop across channel.

m. Match crowns of differing sizes of pipes in manholes.

n. Drop connections are not allowed except as approved by the City. If allowed, drop connections are to be outside drops and are not to exceed 10 vertical feet.

o. All manholes to have locking covers with City service vehicle access provided. Covers shall be designed for sewer use and shall prevent inflow into the manhole from rain or runoff.

p. Invert and rim elevations to be shown on plan and profile for all manholes.

q. Correct invert elevation of the manholes to be shown at point of connection (field verified).

r. When specified by the City, grease interceptors shall be provided for all Commercial, Industrial and School food establishments, or when specified by the City. When specified by the City, a Sample Chamber shall be installed immediately downstream of the Grease Interceptor.

s. Sewer Grinder Pumps are not allowed. Where standard conforming gravity service cannot be achieved and denial of service is the only remaining option, private ownership of grinder pumps may be considered by the City. The Developer's Engineer shall provide the City with information utilized in determining gravity service availability showing that all means of achieving gravity service, regardless of the cost, have been reviewed and eliminated. If it is proven that gravity service is unavailable, only then will the City accept the Developer's Engineer's proposal identifying pump design and the areas to be served for City review and approval.

t. The need for sewage lift stations shall be presented by the Developer and evaluated by the City. If the City determines the need for a lift station, the Developer and the Developer's Engineer shall present areas of service, total developed flow projection, pump capacities and operating head conditions. Design must comply with the City requirements for the site-specific project.

u. Sewer force mains shall be ductile iron and a minimum of 4" in diameter and shall be designed for a minimum of 2 ½ feet per second (fps) velocity.

v. Construction work shall not commence until approval is received from the State Department of Ecology.

w. Where applicable, sewer construction work shall not commence until City personnel have witnessed the installation of a plug to protect the downstream system.

These checklists are partial lists prepared to assist in plan review. See full text of standards and details. Additional City requirements may be mandated, on a case by case basis, due to site specific conditions.

WATER SYSTEM INSTALLATION NOTES

1. Prior to any construction activity, the Developer shall arrange and attend a pre-construction conference with the City. The Developer, Contractor and proposed on-site supervisors shall attend.
2. All work and materials shall be in accordance with the latest revision, including addenda and updates, of the City of White Salmon Construction Standard Specifications and Details. Contractor shall have the City of White Salmon Standards on the jobsite any time construction is in progress.
3. No City inspections will take place and the job will be shut down unless an approved and City signed copy of the plans is on the job site at all times construction is in progress.
4. All water system improvements shall be constructed in accordance with the approved plans. Any deviation from the plans will require approval from the owner, engineer, City and appropriate public agencies.
5. Notify the City 72 hours (3 working days) prior to beginning construction and for any restarts of work.
6. The City shall be notified three working days prior to the time the Developer would like to connect to existing mains or for installation of Tapping Tees. The connection shall be done in accordance with City requirements. Connections to take place Tuesdays through Thursdays only. Developer shall not operate any City valves; these will be operated by City personnel only.
7. For aid in utility location, call 811 a minimum of 48 hours (2 working days) prior to beginning construction. Existing utilities, whether shown on the plans or not, shall be located prior to construction, so as to avoid damage or disturbance, and the Developer shall assume all responsibility and costs associated therewith to protect, maintain and repair, where necessary.
8. Water line construction within the proposed development shall not commence until the street has been brought to sub-grade, meeting City approval.
9. Water main shall be field staked prior to construction, with 25 foot stakes on curves. Lot corners stakes shall also be in place prior to construction.
10. Pipe shall be C-900 PVC conforming to AWWA standards. Where system pressures exceed 150 psi pipe shall be Pressure Class 350 Ductile Iron pipe meeting AWWA standards. All fittings shall be AWWA, cement lined, ductile iron, and either mechanical joint (MJ) or flanged (FL), as indicated herein. All pipe to be purchased and installed as a part of the developer's water system shall be delivered to the job site with water tight wrapping or pipe plugs. Plugs and/or wrapping shall remain in place until the pipe is installed in the trench.

11. Unless otherwise specified, valves 12 inch and smaller shall be ductile iron, resilient seated gate valves meeting AWWA Standards. Acceptable valves are Kennedy, M&H, Mueller, Clow or approved equal. Valves larger than 12 inches shall be ductile iron butterfly valves. Acceptable valves are Pratt Groundhog, Dresser 450 or approved equal.
12. All bolts on water works fittings shall be coated with Armite Anti-Seize Compound No. 609, or approved equal, prior to installation. All water works fittings and bolted assemblies shall be completely covered with minimum 4 mil. visqueen plastic. The ends of the plastic shall be taped to secure them to the pipe.
13. Hydrants shall be Kennedy K81, M&H 929 or approved equal meeting AWWA Standards. Hydrants shall be furnished with threaded outlets meeting fire department/district standards. Both thrust blocking and either Mega Lug or Roma Grip restraints are required on each hydrant installation. Hydrant pumper ports shall have 4 ½" NST threads and be equipped with a 5 inch Storz Adapter. All hydrants shall be painted with two coats of Preservative Paints "Safety Yellow" or approved equal.
14. Provide thrust blocking and/or restrained joints at all fittings, bends and up-thrust fittings, in accordance with City Construction Standards and Specifications.
15. All new connections to the existing water system shall be in strict conformance with the appropriate subsections of the specifications of the City. No more than one connection shall be made between the new main(s) and the existing main(s) until the new piping has been flushed, disinfected, pressure tested and received satisfactory bacteriological test result.
16. Individual water services to the property line shall be 1" diameter minimum size and be installed with 36" minimum cover.
17. Residential fire sprinkler systems shall have a minimum 1 inch meter/service. Backflow prevention assemblies shall be installed on all residential fire sprinkler systems and located immediately behind the water meter/service on the property side.
18. Fire line services shall have a Double Check Detector Backflow Prevention Assembly installed in a utility vault at the ROW/Property line with a 6 inch PVC gravity drain to storm. Fire line service shall terminate, in the structure to be served, with the City's Riser Detail.
19. All commercial, multi-family, industrial and irrigation services shall include a DOH approved backflow prevention assembly located immediately behind and on the property side of the water meter/service. Alternate locations may be acceptable upon approval by the City. Structures requiring fire sprinkler systems shall have at least one backflow prevention assembly per each structure, protecting the potable water system from the fire system. The backflow prevention assembly shall be located in a flood proof vault or service box, depending on size, outside the structure in a location approved by the City.

20. Where road grades are established, provide a minimum of 48 inches of cover over 12 inch or larger water mains, and provide a minimum of 42 inches of cover over 8 inch mains; or additional depth as required to miss other utilities.
21. Water mains constructed within easements or private roads shall be installed with polyethylene encasement (DI Pipe), restrained joints and with a 5'-0" minimum cover. During backfill operations, furnish and install 3 inch wide metallic marker tape over the water main with 3 feet of cover.
22. Minimum radius for 12 inch and smaller pipelines constructed on curves is 258 feet (4 degrees deflection per joint).
23. Compaction: All trench backfill and roadway embankment shall be compacted to 95% of modified proctor dry maximum density in accordance with ASTM D1557, except the top 6 inches in paved areas, which shall be 100%. CDF shall be required for any roadway crossings.
24. Construction inspection will be done by the City and/or their designated engineer. No new facilities will be accepted by the City if proper inspections have not been completed.
25. The water main construction phase will not be considered complete until the installation is acceptable to the City including a satisfactory hydrostatic pressure test, a satisfactory disinfection test, satisfactory flow of service lines and completion of all items on the inspector's punch list.
26. Water service is available only after transfer of ownership to the City and payment of all current applicable fees.

SEWER SYSTEM INSTALLATION NOTES

1. Prior to any construction activity, the Developer shall arrange a pre-construction conference with the City. The Developer, Contractor and proposed on site supervisor shall attend.
2. All work and materials shall be in accordance with the latest revision, including addenda and updates, of the City of White Salmon Construction Standard Specifications and Details. Contractor to have City Standards and Specifications on job site at all times while construction is in progress.
3. A City approved signed copy of the plans shall be on the job site whenever construction is in progress.
4. All work and materials shall be in accordance with the applicable standards and specifications of the City, the Project Specifications and the most recent addition of the APWA Standards and Specifications.
5. Work shall not commence until approval is received from the State Department of Ecology, unless the review and approval is waived by Ecology.
6. Front property corners shall be set by a land surveyor licensed in the State of Washington prior to the start of construction.
7. Notify the City 72 hours (3 working days) prior to beginning construction and for any restarts of work.
8. For aid in utility location, call 811 a minimum of 48 hours (2 working days) prior to beginning of construction. Existing utilities, whether shown on the plans or not, shall be located prior to construction so as to avoid damage or disturbance, and the Developer shall assume all responsibility and costs connected therewith to protect, maintain and repair, where necessary.
9. Pipe lengths, manhole depths, etc., as shown are approximate. Developer is responsible for supplying proper quantities of materials.
10. Provide the City's inspector with a copy of all cut sheets prior to construction.
11. Permanent access for City service vehicles shall be provided at all manholes. Manholes shall be constructed as per City standard details, including construction of channels. Where indicated, provide knock-outs and channelization for side sewer or future mainline extensions; and for PVC pipe, provide a watertight flexible rubber boot or heavy duty sand collar. Provide locking lids for manhole covers.
12. Connection to the existing main shall be done so as to prevent any foreign materials from entering existing sewers. Existing pipe in saddle manhole installations shall not be cut or removed until instructed to do so by the City. Coupons from all taps shall be provided to the City.

13. Connections to existing manholes shall be made by utilization of a concrete core-drilling machine of adequate diameter to grout in place an adapter if PVC sewer lines are installed. Align core-drilling machine to provide a minimum 0.10 foot drop across the manhole.
14. PVC pipe shall be SDR-35 ASTM D3034 furnished in 13 foot maximum lengths and shall be fully encased with pea gravel or ¾ inch crushed surfacing material extending from 4inches below to 12 inches above the pipe barrel.
15. DI sanitary sewer pipe shall conform to AWWA C151 and shall be polyethylene or epoxy lined, restrained joint pipe. The DI pipe shall be Class 52 unless otherwise approved.
16. Sewers to be located below potable water lines, with 18 inches of vertical separation and with a minimum of 10 foot horizontal separation from parallel water lines. Crossing angles shall be 45 degrees or greater. Unusual or special conditions are addressed in accordance with the Department of Ecology and Department of Health criteria.
17. Side sewers shall be a minimum of 6 inches in diameter and shall have a minimum slope of 2%. Side sewer shall include two 6 inch tees at the property line; one within the public right-of-way and one within the private property.
18. All sewer lines shall be cleaned and tested in accordance with City Standards and Specifications.
19. The Developer/Contractor shall be responsible for maintaining and/or repairing asphalt and gravel surface disturbed as a result of their construction until they are accepted by the public works department of the City or County.
20. Compaction: All trench backfill and roadway embankment shall be compacted to 95% of Modified Proctor dry maximum density in accordance with ASTM D1557, except the top 6 inches in paved areas which shall be 100%. CDF shall be required for any roadway crossings.
21. Manhole covers located in asphalt areas shall be adjusted to finish grade prior to paving.
22. No utility facilities will be accepted by the City if proper inspections have not been completed.
23. Sewer service is available only after transfer of ownership to the City and after payment of all current applicable fees.

APPROVAL BLOCK

Approved by:_____ _____

City of White Salmon Date

City of White Salmon Extension No. _____

Project must be completed and ownership transferred to the City of White Salmon within 1 year from the date of approval. In the event that the project developer fails to do so, the project will be subject to reapplication, additional plan review and revision due to any changes in the City's Standards and Specifications or requirements occurring prior to completion and transfer of ownership. Water/Sewer service is available only after payment of all current fees, recording of easements and transfer of ownership to the City.

APPLICATION AND AGREEMENT
TO CONSTRUCT EXTENSION
TO CITY SYSTEM

_____WATER _____SEWER

Project Name: _____ NO: _____

Address: _____

The undersigned (the "Developer") applies to the Council of the City of White Salmon (the "City"), for permission to construct and connect a private extension(s), as indicated above, to the City's existing system as herein provided and agrees to the terms and conditions of this Developer Extension Agreement as follows:

1. Location of Extension.

A. Water

The proposed water system extension (the "extension") will be installed in streets and other approved rights-of-way and/or easements and shall be for the use and benefit of the property hereinafter described, which property is owned by the Developer and/or other owners for whom the Developer is acting as agent. Any such owners have joined in this application and are designated on the signature page hereof as "additional owners." Legal description of the property is noted in Exhibit "A" (Provided by Developer):

B. Sewer

The proposed sewer system extension (the "extension") will be installed in streets and other approved rights-of-way and/or easements and shall be for the use and benefit of the property hereinafter described, which property is owned by the Developer and/or other owners for whom the Developer is acting as agent. Any such owners have joined in this application and are designated on the signature page hereof as "additional owners." Legal description of the property is noted in Exhibit "A" (provided by Developer):

2. Warranty of Authority.

The Developer and any additional owners warrant that they are the owners of all the property described in this Agreement. Developer shall provide a title report to the City establishing that the parties executing this Agreement are the owners of all the real property described herein. Consent of all security interest holds shall be provided.

3. Description of Extension.

A. Water

The proposed extension will consist of approximately _____ lineal feet of water main and appurtenance and shall be installed in accordance with this Agreement and in accordance with the Plans prepared in conformity with the City's Construction Standard Specifications and Standard Plans and approved by the City.

B. Sewer

The proposed extension will consist of approximately _____ lineal feet of sewer main and appurtenance and shall be installed in accordance with this Agreement and in accordance with the Plans prepared in conformity with the City's Construction Standard Specifications and Standard Plans and approved by the City.

4. Fees to be Paid by the Developer.

A. A fee in the amount of _____ is payable prior to acceptance of this Agreement by the City Council (the "Council") as an initial deposit for payment of City expenses including, but not limited to, engineering, inspection, legal, permit and administration costs.

Should said expenses exceed the deposit paid by the Developer, the difference shall be paid by the Developer to the City upon demand. If after the project is completed and accepted, it is determined that the expenses were less than the deposit paid by the Developer, the balance, in excess of $100.00, will be refunded to the Developer.

B. The foregoing fee is not intended to include allowance for any unusual costs incurred by the City on account of property surveys, changes in design, necessary construction

engineer comment preparation, project coordination, errors or omissions by the Developer, its contractor or agents, unusual negotiations, legal expenses incurred beyond the expense of normal review or documents, and/or any other project related costs. The City will bill the Developer for any such unusual costs and the same shall be paid promptly by the Developer. The City may stop work until payment is received.

5. Preparation of Plans.

The Developer shall retain its own engineer to prepare the Plans for the extension according to the City's Standard Specifications and Details and the following requirements apply:

a. Developer must obtain City approval of the Developer's Engineer in accordance with Paragraph WS-11 of this agreement;
b. After the Council accepts the Pre-application and Developer Extension Agreement and the required deposit is received, the Developer's Engineer shall arrange for a pre-design meeting and bring to that meeting:

    1) A complete set of base maps.
    2) A grading and clearing plan.
    3) A Storm sewer plan.
    4) Sanitary sewer plans, if applicable.
    5) City/County fire flow requirements in the form of a letter from the appropriate Fire Official for multi-family and commercial projects (all projects other than single family).
    6) A contour map of the project with contour intervals of five (5) feet or lees and using a scale of one (1) inch equals fifty (50) feet. All data shall be based on North American Vertical Datum of 1988 (NAVD 88).
    7) At the pre-design meeting, a set of City drawing standards will be given to the Developer's Engineer at their request.

c. The Developer shall arrange for the conference and the attendance of concerned parties.
d. At the pre-design meeting, the Developer's Engineer shall submit to the City a conceptual plan for the utility development of the project.
e. Upon preliminary review of the conceptual plan, the Developer's Engineer shall prepare and submit to the City a preliminary design and Plan for review and approval by the City. The City shall have the right to require changes in the preliminary design

and Plan as may be deemed necessary. All Designs and Plans prepared by the Developer's Engineer shall be prepared in accordance with the City's Standard Specifications and Plans.

f. Upon approval of the preliminary design and Plan by the City, the Developer's Engineer shall prepare a proposed final Plan and submit two copies of the proposed final Plan to the City for review by the City. Upon receipt of the proposed final Plan, the City may require changes to the proposed final Plan.
g. Upon completion of all required changes to the final Plan, if any are required, the Council shall consider the final Plan for approval at a regularly scheduled Council meeting. The Council may approve, reject, or require changes to the final Plan.
h. Prior to approval of the final Plan, the Developer shall submit a copy of the preliminary plat as prepared for submittal to the applicable jurisdiction.
i. Upon approval of the final Plan, the City shall indicate its one (1) year approval of the Plan on the Developer's original drawing.
j. Upon approval of the Developer's original Plan drawings, the Developer's Engineer shall submit copies of the approved Plan so that the Developer (or City, when required) can apply for permits and approvals for the Plan. The Developer's Engineer shall notify the City of any permits required. Should changes to the Plan be required in order to receive said permits and approvals, the Developer's Engineer shall make all changes as required, subject to the approval of the City.

6. Warranties of Developer – Water and Sewer.

The bill of sale provided by the Developer to the City shall be on a City approved form and shall contain the following warranties with the City as beneficiary:

a. That Developer is the owner of the extension, the same is free and clear of all encumbrances and the Developer has good right and authority to transfer title thereto to the City and will defend the title of the City against the claims of all third parties claiming to own the same or claiming any interest therein or encumbrance thereon; and
b. That all bills and taxes relating to the construction and installation of the water/sewer main and appurtenances have been paid in full and that there are no lawsuits or claims pending involving this project. The undersigned further warrants that in the event any lawsuit is filed as a result of, or involving, this project the undersigned shall undertake to defend the lawsuit and shall accept responsibility for all costs of

litigation, including costs on appeal, and shall hold the City harmless on any judgement rendered against the City; and

c. That all laws, ordinances and regulations respecting construction of this project have been complied with; the system extension is in proper working condition, order and repair; is adequate and fit for the intende3d purpose of use as a public (water) (sewer) system and as an integral part of the (water) (sewer) system of the City; and that it has been constructed in accordance with the conditions and standards of the City; and
d. That for a period of two (2) years from the date of final acceptance of the extension by the City, the extension and all parts thereof shall remain in proper working condition, order and repair; and that Developer shall repair or replace, at its expense, any work or material which may prove to be defective during the period of the warranty.

In addition, the Developer shall obtain warranties and guaranties from its subcontractor(s) and/or supplier(s) where such warranties or guaranties are specifically required in this Agreement. When corrections of defects occurring within the warranty period are made, the Developer shall further warrant corrected work for 2 years after acceptance of the corrected work by the City.

7. Final Acceptance – Conditions Precedent.

Compliance with all terms and conditions of this Agreement, the Standard Specifications and Plans prepared hereunder and other City requirements shall be a condition precedent to the City's obligation to allow connection to the City's system, to accept the bill of sale to the extension(s) and to provide service to the real property that is described in this Agreement.

The City shall not be required to allow any connection to the City's system of the portion of the real property described in this Agreement, if there are any unpaid fees or costs which are payable to the City under this Agreement or other unpaid fees arising under other City requirements, or if the easements have not been prepared to conform to the constructed alignment of the water and/or sewer system by the Developer and executed by the Developer and the City for recording.

The City shall not be obligated to provide service to the property described in this Agreement, if construction by third parties of facilities to be deeded to the City has not been completed and title accepted by the City if such third-party facilities are necessary to provide service to the property described in this Agreement.

The City will accept title to the extension(s) when all work which may, in any way, affect the lines constituting the extension(s) has been completed, any damage to said extension(s) which may exist has been repaired, the City has made final inspection and given its approval to the extension(s) as having been completed in accordance with this Agreement, the Standard Specifications and Plans and other requirements of the City, and all General Facility Charges, Connection Charges and Impact Fees applicable to the Project in effect on the date of application have been paid.

The City shall not be obligated to allow service connections to its system until all inspections are complete and all fees, General Facility Charges, Connection Charges and Impact Fees in effect on the date of application for service have been paid.

8. Limitation of Period of Acceptance.

The extension(s) shall be completed and accepted within 12 months of the date of acceptance of the Plans by the Council. If the extension is not completed and accepted within the 12 month period, then this Agreement and all of the Developer's rights herein shall terminate and cease. Under special circumstances, with a formal written request, an extension of the time for completion of the Agreement may be allowed at the sole discretion of the City. In the event the Agreement terminates, the Developer shall be required to make a new pre-application and new application for extension agreement to the City. Any such new agreement, including any extension, entered into between the City and the Developer pursuant to a new application shall be subject to any new or amended resolutions, policies, ordinances, or standards and specifications which have taken effect since the execution of the terminated agreement.

9. Maintenance Bond.

Acceptance by the City shall not relieve the Developer of the obligation to correct defects in material or workmanship as herein provided and/or the obligations set forth in applicable paragraphs hereof. Prior to acceptance of the extension(s) by the City and the transfer of title to such extension(s) as set forth herein, the Developer shall, if required by the City, furnish to the City a maintenance bond (cash or bond) which shall continue in force from the date of acceptance of said extension(s) for a period of 2 years. The bond shall be in a form provided by the City and shall require the Developer and/or the bonding company to correct the defects in materials and workmanship, which may arise in, said system(s) and transfer of title. The maintenance bond

shall be in an amount equal to 10 percent of the cost of said extension(s), but not less than two thousand dollars ($2000.00).

10. Procedure for Acceptance.

Acceptance of title to the extension(s) shall be made by motion of the Council. Prior to such acceptance, an executed bill of sale in the form approved by the City and containing the warranties required by this Agreement shall be executed by the Developer and any additional owners and delivered to the City.

11. Effect of Acceptance.

Acceptance by the City shall cause the extension(s) to be a public system subject to the control, use and operation of the City and all regulations, conditions of service, and service charges as the City determines to be reasonable and proper, and subject to the law of the State of Washington.

12. Performance Guarantee.

Developer shall, if requested, furnish to the City prior to the preconstruction conference a performance guarantee of a type and in a form as determined by the City, in its sole discretion, in an amount equal to 150 percent of the City approved Developer's Engineer estimated cost of the extension(s) or contractor bid price(s). The performance guarantee shall require completion of all work in accordance with the Agreement, the Standard Specifications and Plans and other requirements of the City within a period of 12 months from the date of acceptance of the Plans by the Council. The City in its sole discretion may also require a payment bond of a type and in a form as determined by the City requiring the payment by the Developer of all persons furnishing labor and materials in connection with the work performed under the Agreement, and shall hold the City harmless from any claims therefrom. Any payment bond required by the City shall be provided to the City prior to the preconstruction conference as a condition of the District granting final acceptance of the work referenced herein. No third person or party shall have any rights under any performance guarantee the City may require from the Developer and such is provided entirely for the benefit of the City and the Developer and their successors in interest.

13. Correction of Defects Occurring Within Warranty Period.

When defects in the extension(s) are discovered within the warranty period, Developer shall start work to remedy any such defects within 7 calendar days' notice by the City and shall complete such work within a reasonable time. In emergencies, where damage may result from delay and where loss of service may result, corrections may be made by the City upon discovery, in which case the cost thereof shall be borne by the Developer. In the event the Developer does not commence and/or accomplish corrections within the time specified, the work may be accomplished by the City at its option, and the cost thereof shall be paid by the Developer.

Developer shall be responsible for any expenses incurred by the City resulting from defects in the Developer's work, including actual damages, costs of materials and labor expended by the City in making repairs and the cost of engineering, inspection and supervision by the City.

14. Rates and Charges.

The property described in this Agreement shall be subject to all rates and charges established by the City.

15. Subcontracting.

Developer is fully responsible for the acts and/or omissions of subcontractors and persons employed, directly or indirectly, by subcontractors, as well as the acts and/or omissions of persons directly employed by the Developer.

16. No Assignment Without City Approval.

The Developer's rights and responsibilities arising out of this Agreement are not assignable unless City written consent is obtained prior to any proposed assignment. Written documents as required by the City of any City approved assignment shall be filed with the City by the Developer herein at the time of any assignment.

17. General Provisions, Technical Details, Specifications.

Refer to the "Part One, Two, and Three" for General Provisions, Water, Sewer Standard Specifications and Standard Details, which are attached hereto and made a part of this Agreement.

18. Remedies Available to City.

In the event the Developer fails to pay any of the extension fees and charges and fines referenced herein when due as determined by the City, the charge or fine shall then be delinquent and shall accrue interest at the highest legal rate per annum until paid. In addition to all other legal and equitable remedies available to the City, the City shall be entitled to file a lien against the Real Property referenced herein in the event of nonpayment and to foreclose such lien pursuant to RCW 57.08.081, or as such statutes may be revised, amended or superseded. In the event the City is required to engage an attorney to pursue its remedies on default, the City shall be entitled to recover its attorney fees and costs, and in the event of litigation, the prevailing party shall pay the non-prevailing party's attorney fees, costs and disbursements at trial and on appeal.

19. Notice

Any notice required by this Agreement to be given by the City to the Developer shall be given at the following address:

Name: _____ Phone: _____

Address: _____

_____

20. Complete Agreement.

This Agreement, including Parts One, Two and/or Three as appropriate and the plans approved by the City constitutes the entire Agreement between the Developer and the City with respect to the rights and responsibilities of both parties in regard to Development project

referred to herein. For purposes of identification, this Agreement shall be assigned to a number by the City, which number shall be endorsed on the first page of the Agreement. This Agreement may be changed in writing only upon mutual agreement of the City Council and the Developer.

ACCEPTANCE OF THIS APPLICATION BY THE CITY CONSTITUTES A CONTRACT WITH THE APPLICANT, THE TERMS OF WHICH ARE EACH PARAGRAPH OF THIS MANUAL, THE CITY'S MATERIALS, STANDARD SPECIFICATIONS AND DETAILS, AND THE EXTENSION DESIGN DRAWINGS APPROVED BY THE CITY COUNCIL.

DEVELOPER, _____,
a _____corporation, _____partnership, _____joint venture, _____sole proprietorship, _____individual.

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 joint venture, each joint venture shall sign. One may sign on behalf of the others pursuant to a power of attorney.

DATED this _____ day of _____, 20_____.

By _____
(Owner)

_____
(print/type name)

Its _____
(print/type name)

INDIVIDUAL

STATE OF WASHINGTON)
)ss.
COUNTY OF KLICKITAT)

I certify that I know or have satisfactory evidence that _____

_____

signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in the instrument.

Dated _____

_____
Notary Public in and for the State of Washington, residing at _____. My Appointment Expires _____.

CORPORATE / PARTNERSHIP

STATE OF WASHINGTON)
)ss.
COUNTY OF KLICKITAT)

I certify that I know or have satisfactory evidence that _____
_____
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 _____

_____
Notary Public in and for the State of Washington, residing at _____. My Appointment Expires _____.

THE FOREGOING APPLICATION of _____accepted this _____ day of _____, 20_____.

CITY OF WHITE SALMON

By _____
Its Mayor

STATE OF WASHINGTON)
) ss.
COUNTY OF KLICKITAT)

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 City Administrator, or their designee, of the City of White Salmon, a municipal corporation, to be the free and voluntary act of such corporation for the uses and purposes mentioned in the instrument.

Dated _____

_____
Notary Public in and for the State of Washington, residing at _____

My Appointment Expires _____

PART 1

PROVISIONS APPLICABLE TO WATER AND SEWER EXTENSIONS

A. GENERAL AND PRECONSTRUCTION

WS-1 DEFINITIONS

(a) "City" means the City of White Salmon and its employees.

(b) "City Engineer" means the engineering firm, and that firm's representatives, retained and assigned by the Council to act as the Engineer for the work to be performed under this Agreement.

(c) "Concerned Parties" means those persons, companies, or agencies designated by the City to attend the preconstruction conference.

(d) "Contractor" means the person, firms, Contractors or Sub Contractors employed by the Developer to do any part of the work, all of whom shall be considered agents of the Developer.

(e) "Council" means the City Council of the City of White Salmon.

(f) "Design" means design and the preparation of the Plans for the extension to the City's water distribution and/or sewer collection system.

(g) "Developer" means the owner(s) of property to be benefited by the proposed extension, or that person or organization in charge of developing the project, either on behalf of the owner(s) or pursuant to an agreement to purchase the property, and includes the Developer's agents.

(h) "Developer Engineer" means the engineering firm, and that firm's representatives, retained by the Developer to design and prepare the Plans for the work to be performed under this agreement in accordance with City specifications, and which shall be considered an agent of the Developer.

(i) "Otherwise Specified, or As Specified" means the directions contained in the Plans, Special Specifications, if any and otherwise as given by the City, incident to the performance of the work other than in these General Provisions.

(j) "Plans" means drawings, including reproductions thereof, of the work to be performed as an extension to the City's water distribution and/or sewer collection system, prepared or approved by the City, and approved by the Council.

(k) "Specifications" means the directions, provisions, standards, and requirements as approved by the Council for the performance of the work

and for the quantity and quality of materials.

(l) "Work" means the labor, materials, superintendence, equipment, transportation, supplies, and other facilities necessary or convenient to the completion of the proposed extension described in the application contained herein.

WS-2 PURPOSE

THE CITY OF WHITE SALMON, as a municipal corporation, has a responsibility to the public to ensure that water and sewer mains installed in public streets or easements are constructed in accordance with currently accepted standards for public work. The requirements imposed upon developers by these regulations are intended by the City as a contract with the Developer, incorporating minimum standards, which are prerequisite to acceptance of the work by the City as a part of its water and sewer systems. Privately constructed extensions shall not be permitted to connect thereto unless the work is performed and paid for in accordance with these regulations.

WS-3 AUTHORITY OF THE CITY

The City may approve, reject, or require changes in Plans prepared by the Developer's Engineer, including such changes in the Plans as the City may deem necessary during the course of work. The City shall inspect the work and may stop work whenever necessary to ensure compliance with the approved Plans and Specifications. The City shall have authority to reject nonconforming work and materials and to decide questions arising during performance of the work. The failure of the City to reject or disapprove any part of the work or materials shall not be deemed an acceptance of any such part of the work or materials. The City shall have the authority to approve or disapprove the contractor selected by the Developer to perform the work.

WS-4 GOVERNING LAW/FORUM

This Agreement shall be construed and enforced in accordance with, and the validity and performance hereof shall be governed by the laws of the State of Washington. Any suit to enforce the provisions of the Agreement shall be brought in Klickitat County, Washington.

WS-5 NO THIRD PERSON SHALL HAVE ANY RIGHTS HEREUNDER

This Agreement is made entirely for the benefit of the City and the Developer and successors in interest and no third person or party shall have any rights hereunder whether by agency or as a third-party beneficiary or otherwise.

WS-6 REIMBURSEMENT CHARGES

The Developer shall also pay all reimbursement charges, if any, levied against the property pursuant to the City's reimbursement policy.

WS-7 COSTS OF LITIGATION

If the City or the Developer commences any legal action relating to the provisions of this Agreement, the prevailing party shall be entitled, in 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 attorney's fees, including all such costs and fees incurred in appeal.

If litigation arises out of this Agreement or related to this project to which the City is not a party, the Developer will reimburse the City for all costs and expenses, including attorney's or engineer's fees, incurred as a result of such litigation, including but not limited to time and materials at the regular rates established by City ordinance.

WS-8 LIABILITY INSURANCE

The Developer/Contractor's required insurance shall be of the types and coverage as stated below:

1. Automobile Liability insurance covering all owned, non-owned, hired and leased vehicles. Coverage shall be at least as broad as Insurance Services Office (ISO) form CA 00 01.

2. Commercial General Liability insurance shall be as least at broad as ISO occurrence form CG 00 01 and shall cover liability arising from premises, operations, independent contractors, products-completed operations, stop gap liability, personal injury and advertising injury, and liability assumed under an insured contract. The Commercial General Liability insurance shall be endorsed to provide a per project general aggregate limit using ISO form CG 25 03 0509 or an equivalent endorsement. There shall be no exclusion for liability arising from explosion, collapse or underground property damage. The Public Entity shall be named as an additional insured under the Contractor's Commercial General Liability insurance policy with respect to the work performed for the Public Entity using ISO Additional Insured endorsement CG 20 10 10 01 and Additional Insured-Completed Operations endorsement CG 20 37 10 01 or substitute endorsements providing at least as broad coverage in a form acceptable to the City prior to the Pre-Construction Meeting.

3. Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

The minimum limits of coverage shall be as follows:

General Aggregate	$2,000,000.00
Products - Comp/OPS Aggregate	$2,000,000.00
Personal Injury	$2,000,000.00
Each Occurrence	$2,000,000.00
Automobile Liability	$2,000,000.00

Policies shall be kept in force until the project is accepted by the City. The City shall be given at least 30 days written notice of cancellation, non-renewal, material reduction, or modification of coverage.

The coverage provided by the insurance policies are to be primary to any insurance maintained by the City, except with respect to losses attributable to the sole negligence of the City. Any insurance that might cover this Agreement which is maintained by the City shall be in excess of the Developer's/Contractor's insurance and shall not contribute with it.

The insurance policy 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 with respect to any claim, suit or judgment made or brought by or for any other insured or by or for any employee of any other insured.

The general aggregate provisions of the insurance policy shall be amended to show that the general aggregate limit of the policies apply separately to this project.

The insurance policy shall not contain a deductible or self-insured retention in excess of $10,000 unless approved by the City.

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

WS-9 INDEMNITY

The Developer shall indemnify, defend and hold the City and all its representatives harmless from and against all losses and claims, demands, payments, suits, actions, recoveries and judgments of every nature and description brought or recovered against the City by reason of the act or omission of the Developer, its agents or employees, in the performance of the work, and for any cost or expense incurred by the City in connection therewith, including overhead expense, legal expense, attorney's fees and costs attributable thereto; and if suit in respect to the foregoing is filed, the Developer shall appear and defend the same at its own cost and expense, and if judgment is rendered or

settlement made requiring payment of damages by the City, the Developer shall pay the same. The Developer's obligation to indemnify the City shall not extend to the sole negligence of the City or to the extent of any concurrent negligence of the City.

Developer agrees to hold the City harmless from any liability or expense, including reasonable attorney's fees incurred by the City by reason of the Developer's (or the Developer's employees or contractors) breach of any covenant contained on any franchise or permit granted by state, city, county, or public or private utility to the City for the purpose of enabling the Developer to undertake construction within any right-of-way.

The Developer further agrees that if any official complains to the City that the Developer is violating such franchise or permit in any respect, or if the Developer damages any City facilities, the City Manager shall give the Developer such notice as is reasonable under the circumstances to comply with such franchise or permit or to make repairs or restoration. In such event that the City deems it necessary to make any repairs or restoration (emergency or otherwise), the City shall be reimbursed for the cost thereof by the Developer.

In any and all claims against the City or any of its agents or employees by any employees of the Developer, its Contractor, or any subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation under this article shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Workmen's Compensation Acts, Disability Benefit Acts, or other employee benefit acts. THE WAIVER OF ANY LIMITATION OF THE INDEMNIFICATION OBLIGATION CONTAINED IN THIS PARAGRAPH HAS BEEN SPECIFICALLY NEGOTIATED BY THE PARTIES.

WS-10 SELECTION OF DEVELOPER'S ENGINEER

When the Developer submits this Agreement to the City for execution, the Developer shall notify the City in writing of the person or firm proposed to do the design. The Developer shall not employ any person or firm for any part of the design work that the City may object to as incompetent, unfit, or irresponsible. Nothing contained in this Agreement shall create any contractual rights between the City and any person or firm employed by the Developer to design and prepare the Plans.

WS-11 AUTHORITY OF DEVELOPER'S ENGINEER

The Developer's Engineer shall only have authority to design and prepare the Plans for the extension to the City's water distribution and/or sewer collection system. The Plans shall conform in all respects to the City's Standard Details and Specifications and they must be approved by the City prior to commencement of work. The City shall have the sole right to approve or reject the Plans or require changes to be made to them. Failure of the City to require changes in the Plans prior to Plan approval shall not be deemed a

waiver of the City's right to require such changes in the Plans as the City may deem necessary during the course of work. Failure by the City to discover errors, omissions, or discrepancies in the Plans shall not relieve the Developer of this responsibility.

WS-12 OMISSIONS AND DISCREPANCIES

Minor items of work or materials omitted from Plans and Specifications prepared by the City, the City's Engineer, or the Developer's Engineer, but clearly inferable from the same and which are called for by accepted good practice, shall be provided and/or performed by the Developer as part of the construction. In case of doubt, the City shall be consulted and its decision shall be final.

WS-13 DEVELOPER TO BE INFORMED

The Developer shall be fully informed regarding the nature, quality and extent of the work to be performed, and if in doubt, shall secure specific instructions from the City.

The Developer shall employ on the project site during progress of the construction of the project, a competent supervisor who shall represent the Developer during their absence, and to whom instruction may be given as though to the Developer. The Supervisor shall become familiar with the Plans and Specifications and shall promptly report to the City any error, inconsistency or omission which may be discovered.

WS-14 PLANS AND SPECIFICATIONS ACCESSIBLE

The Developer shall have one copy of the Signed Plans and Specifications constantly accessible on the job.

WS-15 OWNERSHIP OF PLANS

The original mylars, three plan copies and an electronic file of all "as built" plans prepared by Developer's Engineer shall be delivered to the City as a condition of and prior to acceptance of the project, and shall become the property of the City. Neither Developer nor Developer's Engineer shall have any rights of ownership, copyright, trademark, or patent in the Plans.

WS-16 QUALITY OF MATERIALS AND WORKMANSHIP

Unless otherwise specified, all materials shall be new, and workmanship and materials shall be of the highest quality commonly used. The Developer shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

WS-17 EXISTING UTILITIES OR OBSTRUCTIONS

A. Preparation of Plans.

The City shall make available to the Developer information it may have regarding existing utilities and obstructions. Such information will be provided to the Developer for whatever value it may have, without any guaranty of its accuracy or that it is complete. Incompleteness or errors in this information shall not be basis for a claim against the City nor shall it relieve the Developer or responsibility for repairing any damage its activities may cause to such utilities.

B. Notification of Utilities.

In every case, the Developer shall contact all utilities and determine what existing utilities and obstructions may exist. The Developer shall reimburse the City for damage to the property of the City or damage to property of others caused by the Developer for which the City is liable and for other expenses, including attorney's fees and court costs incurred by the City because of such damage. Whenever the Developer fails to repair or restore existing improvements damaged by its operation within 48 hours of notice, the City may perform the work or contract with others to perform the work and all costs incurred shall be paid by the Developer; provided that whenever the City determines an emergency exists, it may notify the Developer who shall commence repair or restoration work immediately, or the City may undertake the work itself or through another contractor at the Developer's expense.

C. Asbestos Cement Pipe.

The Developer shall be aware that portions of the existing water mains within the City are asbestos cement pipe. The Developer shall conduct all work related to existing asbestos cement pipe in strict accordance with current WISHA safety regulations and provisions contained within the latest edition of "Recommended Standard Asbestos-Cement Pipe Work Practice Procedures and Training Requirements" adopted and published by the Pacific Northwest Section of the American Water Works Association. All costs related to work in compliance with established rules and regulations shall be the responsibility of the Developer.

WS-18 MATERIALS AND EQUIPMENT LIST

The Developer shall file a material and equipment list with the City no later than 14 calendar days prior to the start of construction, including the quantity, manufacturer, and model number, if applicable, of material and equipment to be installed as part of the work. This list shall be prepared even though the Developer utilizes materials and equipment named in the Specifications. The City shall have the right to reject materials and equipment, which in the City's opinion do not conform to City specifications and the approved Plans. Failure of the City to reject materials and equipment at the time the list

is filed shall not be deemed a waiver of the City's right to reject such materials or equipment at a later time.

WS-19 DETERMINATION OF "AS EQUAL"

The City shall be sole judge whether supplies or material qualify "as equal" substitutions under the Plans and Specifications.

WS-20 SPECIFICATIONS INCORPORATED BY REFERENCE

Where federal, AWWA, ASTM, APWA, Klickitat County, WSDOT, or any other standard specifications are referenced or included by reference herein the latest issue and/or amendment thereto published at the date of approval of the Agreement by the City shall be incorporated in the contract. Should a conflict exist between the approved design drawings and any standard specifications or details referenced herein, the City shall determine which shall prevail.

WS-21 COMPLIANCE WITH PUBLIC AUTHORITY

The work shall be performed in accordance with regulations of each public authority, including federal, state, county, public health departments, and municipalities, which may have jurisdiction over the manner and quality of performance of the work. The Developer shall be responsible for investigating and ascertaining the requirements of each public authority. The Developer shall reimburse the City for all costs incurred by the City for permits, inspection fees and other charges imposed by public authority because of the work.

The public shall not be inconvenienced unnecessarily in its use of the public streets.

The Developer shall enforce discipline and good order among its employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned to them. Employees or agents of the Developer who may impair the quality of the construction shall be removed from the work upon the written request of the City, without cost to the City.

All construction in public streets or rights-of-way shall be performed in accordance with the standards and requirements of the governmental agency having jurisdiction, and in accordance with requirements of the franchise or permit therefore. The Developer shall be responsible to ascertain these requirements and for assuring that its Contractor adheres thereto.

The Developer shall be responsible for assuring compliance with the requirements of all permits, franchises, and licenses.

WS-22 ROYALTIES AND PATENTS

The Developer shall pay all royalties and license fees and defend all suits or claims for infringement of any patent rights and shall save the City harmless on account thereof, except the City shall be responsible for all such loss if a particular process or the product of a particular manufacturer is specified by the City, unless the Developer or its Contractor has information that the process or article is an infringement of a patent and fails to promptly notify the City thereof in writing.

WS-23 LAWS TO BE OBSERVED

The Developer shall comply with all federal, state, and local laws, ordinances and regulations that affect the work, which is the subject of this Agreement.

WS-24 CITY ORDINANCES AND FINES

The Developer's attention is specifically directed to WSMC Chapter 13 (unlawful connection) and/or any ordinance repealing and/or replacing said ordinance. The foregoing Ordinance imposes a fine for violating its terms and conditions. Specification of this Ordinance is not intended to be inclusive or limiting, and the Developer hereby agrees to comply with all City Ordinances and to ensure compliance with City Ordinances by the Developer's agents. The Developer agrees to pay any fine imposed pursuant to City Ordinance as a condition of and prior to connection to the City's system.

WS-25 OTHER WORK

The City has the right to let other contracts for other work which may affect the work hereunder. Other persons performing such other work shall be afforded reasonable opportunity by the Developer herein for introduction and storage of their materials and execution of their work. The work hereunder and such other work shall be properly coordinated and connected.

WS-26 CONTRACTORS

Only Contractors licensed and bonded with the State of Washington and approved by the City shall be hired to install water and/or sewer extensions. Contractors must have prior experience in the installation of water and sewer extensions. A copy of the license shall be provided to the City. Nothing contained in this Agreement shall create any contractual rights between the City and any person or firm employed to do the work.

WS-27 EASEMENTS

All easements required shall be obtained by the Developer in a form satisfactory to the City without cost to the City and shall provide for a permanent easement and temporary

construction easement as shown on the Plans. All easements shall be of the following types, unless specifically modified by the City:

1) Offsite Easement:

   This easement is required for water and/or sewer facilities installed on private property offsite of the proposed development.

2) Onsite Easement (Private Road)

   This easement is required for water and/or sewer facilities installed in a private road within the proposed development and shall include the full easement length and width provided for the private road together with an additional 10 feet parallel and adjoining each side of the private road.

3) Onsite Easement

   This easement is required for water and/or sewer facilities installed on private property located within the proposed development and outside of private or public roads.

4) Parallel and Adjoining Easement

   This easement is required parallel and adjoining to all public roads within or bordering the proposed development.

Parallel and Adjoining Easements shall be a minimum of ten feet in width and all other easements shall be a minimum of fifteen feet in width. The width of the onsite and/or offsite easements may be required to be increased by the City, at their discretion for reasons such as, but not limited to, water and/or sewer facilities installed at depths greater than 10 feet or in areas where access is difficult due to topographic constraints.

All easements shall be clearly identified on the plans and labeled as easements granted to the City of White Salmon.

All easements shall be clearly written in a manner that the easement can be plotted from the description. The Developer shall provide the City with supporting data to verify the location of all easements including 8-1/2" x 11" drawings of the property and easement with bearings and distances utilized in the easement description. When requested, the Developer shall provide the City satisfactory title insurance, insuring without exception the City's interest in all easements conveyed to the City. Permanent easements shall be conveyed to the City free of any permanent structures or other structures which interfere with City maintenance and operations. The Developer further covenants and agrees not to construct or install such structures on or near the easement. Executed copies of offsite

easements shall be delivered to the City prior to construction. All other easements shall be delivered to the City prior to the acceptance of the work addressed in this Agreement.

WS-28 PRE-CONSTRUCTION CONFERENCE

No work shall begin on the extension(s) until the Developer has held a preconstruction conference with all concerned parties at City Hall. The Developer shall arrange for the conference and the attendance of concerned parties only when all necessary permits have been issued by public authority and are in the City's possession.

B. CONSTRUCTION

WS-29 PROTECTION OF WORK AND PROPERTY

The Developer shall exercise due care to protect property and the work addressed by this Agreement. The Developer shall be solely responsible for any loss or damage to property or the work herein occurring prior to the completion of and acceptance of the work by the City.

WS-30 PUBLIC HAZARD OR INCONVENIENCE

If the performance of the work should result in hazard or substantial inconvenience to the public, the City may correct the same, if in the opinion of the City the same should be necessary, and the Developer shall, on request, reimburse the City for expense incurred. The Developer shall also reimburse the City for the expense incurred in complying with any order of public authority lawfully made with respect to the work during the performance of the work or within the two-year guarantee period after acceptance of the same.

WS-31 SAFETY

The Developer shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during the performance of the work, and for compliance with all federal, state, and local safety laws and regulations. This requirement will apply continuously and not be limited to normal working hours.

The right of the City or the City's Engineer to conduct construction review of the Developer's performance or inspection of the work or the site is not intended to include review of the adequacy of the Developer's safety measures in, on, or near the construction site.

WS-32 SANITATION

Necessary sanitation convenience for the use of workmen on the job, properly secluded from public observation, shall be provided and maintained during the performance of the work as required by the appropriate agency.

WS-33 CROSS-CONNECTION CONTROL

The Developer shall comply with all state, local and City rules and regulations prohibiting cross-connections. The Developer shall install and maintain state approved backflow prevention devices as required by the City in its absolute discretion as a condition of receiving final acceptance of the extension improvements and utility service from the City. Prior to acceptance of the Project, the Developer shall provide the City with a certified field test of all permanent backflow prevention devices.

WS-34 INSPECTION AND TESTS

All work shall be subject to inspection by the City. The City shall at all times have access to the work whenever it is in preparation or progress, and the Developer shall provide proper facilities for such access and inspection. The Developer shall make reasonable tests of the work at the Developer's expense upon the City's request. Whenever work must be specially tested or inspected for compliance with public regulations, or with the Plans and Specifications, the Developer shall give the City reasonable notice of the readiness of the work for such test or inspection. The City shall make inspections within 24 hours of notification by the Developer. Work shall not be covered up without consent of the City, and if it should be covered without such consent, it shall be uncovered for inspection at the Developer's expense. Such inspections and tests shall not relieve the Developer of any of its responsibilities under this Agreement.

The presence or absence of a City inspector on any job will be at the sole discretion of the City, and such presence or absence of a City inspection shall not relieve the Developer of its responsibility to obtain the construction results specified in the Agreement.

The City and the City's Engineer do not purport to be a safety experts, and are not so engaged in that capacity whenever performing inspections and tests pursuant to this provision. The authority of the City to perform inspection and tests shall not relieve the Developer of its responsibility for safety.

WS-35 OVERTIME AND HOLIDAY WORK

There will be no overtime work for City personnel. If it is necessary for City personnel to work overtime caused by the Developer, the time will be charged to the Developer at the City's established rate. If it is necessary for work to be done on a weekend or holiday,

the Developer will be charged a 4 hour minimum call-out. If approved by the City, 72 hours notice shall be required.

WS-36 TRAFFIC MAINTENANCE AND PROTECTION

All work shall be performed with due regard for the safety and convenience of the public and so that interference with automotive and pedestrian traffic is minimized. Flagging personnel, barricades, signs, and traffic control shall be furnished as required by the appropriate agency.

WS-37 ACCESS

Bridging shall be provided across private driveways and roadways during the period when trenches are open to avoid interference with normal traffic flow.

WS-38 REFERENCE POINTS AND INSTRUCTIONS

The Developer shall provide all property corners and street centerline stakes, and shall provide reasonable and necessary opportunities and facilities for setting points and making measurements including construction staking. The Developer shall not proceed until provisions have been made to establish such points as may be necessary for the work. The work shall be performed in strict conformity with such points and instructions. The Developer shall carefully preserve all bench marks, reference points and stakes, and, in case of destruction, shall be responsible for any resulting expense such as the cost of restaking and shall be responsible for any errors that may be caused by their absence or disturbance.

WS-39 ALIGNMENT OF PIPES AND APPURTENANCES

The Developer shall furnish sufficient horizontal control, including lot stakes and construction stakes, for locating and staking the lines and appurtenances. Correctness of such horizontal control is the sole responsibility of the Developer and any modification of horizontal location of any facility shall be at the Developer's expense.

WS-40 CONFINEMENT OF DEVELOPER'S OPERATIONS

The Developer shall confine construction activities within the property of the Developer and the limits of easements and construction permits outside of the Developer's property. All work on easements and permit areas outside the Developer's property shall be performed in strict compliance with the provisions of the easement or permit with which provisions the Developer shall familiarize itself. Any damage to property or persons from any encroachment beyond these limits shall be the responsibility of the Developer.

WS-41 RESTORATION OF IMPROVEMENTS

Culverts, driveways, roadways, pipelines, or other existing improvements located within easements and public rights-of-way which are removed or disturbed in the course of the work shall be restored to their original condition at the expense of the Developer. In cutting through established lawns, the sod shall be removed before trenching and replaced after backfilling to the satisfaction of the property owner. Private improvements and landscaped areas shall be restored to their former condition at the expense of the Developer. A signed release from the affected property owner will be required. As a minimum requirement, all restoration shall be conformed to the condition of the area prior to construction.

In areas where restoration of existing improvements is necessary and to provide records of existing improvements, the Developer shall provide photographs before and after construction as required in a format acceptable to the City.

WS-42 EROSION CONTROL

Erosion and sediment control throughout the project including abutting and downstream properties shall be the responsibility of the Developer. The Developer shall determine the appropriate temporary erosion and sedimentation control necessary for the construction time of the year and shall furnish and install the necessary controls as the first order of work. Such erosion control shall be fully maintained during the course of construction, modifying the control when necessary. Temporary erosion and sedimentation control shall consist of and be installed in accordance with the Department of Ecology's Storm Management for the Puget Sound Basin Technical Manual for water quality. Upon failure of the Developer to provide immediately such erosion control, the City shall be at liberty, without further notice to the Developer to install and remove the necessary erosion control. The Developer shall reimburse the City for any costs incurred on account thereof.

WS-43 TRENCH SAFETY SYSTEMS

The Developer shall provide safety systems for trench excavation that meet the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW, and any regulations published thereunder, for all trench excavation that will exceed a depth of 4 feet.

WS-44 EXCAVATION AND BACKFILL

These Specifications refer particularly to trench excavation. However, the applicable provisions shall also apply to all excavation and backfill for manholes, structures and other appurtenances.

All excavation performed shall be considered unclassified. Excavation shall consist of the removal of any and all material encountered, including, but not limited to cutting and removal of existing surfacing, tree stumps, trees, logs, abandoned rail ties, piling, riprap, rock, etc.

The root systems of all trees which are outside of the easements or the right-of-way shall not be cut or disturbed, but shall be tunneled or otherwise protected by the Developer to ensure that no damage is done.

Where trenching is performed through paved and concrete areas, the hard surface shall be precut with saws or mechanical cutters in neat, straight lines before removal. The pavement and concrete so removed shall be loaded and hauled to waste.

During excavation, installing of pipelines and structures, and the placing of backfill, excavations shall be kept free of water. The Developer shall furnish all equipment necessary to dewater the excavation and shall dispose of the water as required by the regulatory agencies and in such a manner as not to cause a nuisance or menace to the public. The dewatering system shall be installed and operated by the Developer so that the ground water level outside the excavation is not reduced to the extent that the adjacent structures or property are endangered or damaged. The release of ground water to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soil, prevent disturbance of backfill, and prevent movement of structures and pipelines.

Where the undisturbed condition of natural soils is inadequate for support of the planned construction, excavation shall be extended below the structure or pipeline grades to permit the placing of foundation gravel.

The water main shall be bedded to a point 6 inches over the crown of the pipe by hand shoveling the material into place and working it under and around the pipe and compacting it with foot tamping or other suitable means to provide proper support to the pipe in its backfilled condition. Excavated material which is unsuitable for bedding the pipe shall be hauled to waste and the pipe bedded with gravel backfill for pipe bedding as indicated in the Specifications for Gravel Materials.

The gravity sewer shall be bedded to a point 12 inches over the crown of the pipe by hand shoveling the material into place and working it under and around the pipe and compacting it with foot tamping or other suitable means to provide proper support to the pipe in its backfilled condition. The pipe shall be bedded with gravel backfill for pipe bedding (or pea gravel) as indicated in the Specifications for Gravel Materials.

From the points described above to finished grade, all backfill materials shall be compacted to a minimum of 95 percent of the Modified Proctor dry maximum density per ASTM D1557. The Developer shall provide the City with laboratory test results indicating compaction of the trenches meet this requirement.

Compaction Test Table

Material Trenches	Gradation/Classification See Note 1	Minimum Sampling Soils evaluation before and during construction by Developer's soils geologist. Testing as recommended.
	In-Place Density See Note 2 & 3	Minimum of one every 200 feet of trench, a minimum of one per day or as approved by the Engineer in areas of existing or proposed streets and one every 200 feet of trench in easements.
	Moisture-Density Relationships	Required for varying soil conditions as determined by soils geologist.

Note 1: All acceptance tests shall be conducted from in-place samples.

Note 2: Additional tests may be required when variations occur due to the Contractors operations, weather conditions, site conditions, etc.

Note 3: For trenches 12 feet and under, complete a minimum of one test at approximately 50 percent of trench depth and an additional test at or near the surface.

For **trenches 12-feet to 16-feet deep**, complete one test at approximately 4 feet above the pipe, one test at or near the surface and one test approximately halfway in between.

For **trenches greater that 16-feet deep**, complete tests at approximately 4-foot intervals above the pipe to the surface (four tests required) or as directed by the Engineer.

If compaction within any area of the project is questionable as determined by the City and prior to paving, additional excavation and testing in accordance with the above table as directed by the City shall be completed.

The Developer shall prepare and restore all test sites with his own equipment, labor, and materials. All costs incidental to the preparation and restoration of all test sites shall be at the Developer's cost.

The Developer shall remedy, at his expense, any defects that appear in the backfill prior to final acceptance of the work.

Within existing streets and rights-of-way, all trench backfill material shall be gravel base as indicated in the Specifications for Gravel Base or controlled density fill (CDF) as required by the City or permits.

Partial backfill to protect the pipe will be permitted immediately after the pipe has been properly installed. Complete backfilling of trenches will not be permitted until the section of work in question has been inspected by the City.

Cleanup operations shall progress directly behind backfilling to accommodate the return to normal use of the trench area. Cleanup shall include cleaning streets over which waste haul has been carried and spilled.

The City reserves the right to restrict the Contractor in the amount of trench open during the working day. Should the Contractor, in the City's opinion, fail to diligently pursue the backfill and cleanup, this limit shall be 200 LF and shall be strictly enforced.

The Developer shall remedy, at no cost to the City, any defects that appear in the backfill prior to final acceptance of the work and also prior to termination of the performance bond. Such repair work required because of defective backfill shall also include replacement of any damaged surface improvements.

When trench dams are required, they shall be installed across the entire trench section keyed a minimum of 12-inches into undisturbed soil and to the full depth of all granular backfill materials. Trench dams shall be utilized in all areas of steep slopes, stream, and wetlands crossings and as determined by the City and other local governmental authorities. A drain may be required at the discretion of the City.

WS-45 GRAVEL MATERIALS

The types of gravel material which are to be used in trenches or other excavations are divided into the following classifications:

A. Foundation Gravel

This material shall be 1/2- to 2-inch gravel or broken stone. No more than 20 percent by weight shall pass the 1/2-inch sieve and not more than 2 percent shall pass the U.S. No. 200 sieve. The material shall be free of clay and organic material, but the material need not be washed. The material shall not have a wear percentage exceeding 35 percent after

500 revolutions by the use of the Los Angeles Machine. Foundation gravel shall be used only where foundations are unstable and suitable excavated material immediately adjacent to the excavation is not available to stabilize such foundations.

B. Gravel Backfill for Pipe Bedding

Gravel backfill for pipe bedding shall consist of crushed, processed, or naturally occurring granular material. The material shall be free of clay and organic material. Not less than 95 percent shall pass the 1/2-inch sieve and not less than 95 percent shall be retained on the No. 4 sieve. Grading shall be to the limiting dimensions, but the material need not be washed. Saturated material will not be acceptable.

Gravel backfill for pipe bedding shall be placed under and around pipes as shown on the Standard Details when existing excavated material does not meet the above specification.

C. Crushed Surfacing, Base Course

This material shall conform to the Specifications for Crushed Surfacing, base course, Section 9-03.9(3) of the Standard Specification for Roads, Bridge, and Municipal Construction of the State of Washington.

D. Gravel Base

This material shall conform to the Specification for Gravel Base, Section 9-03.19 of the Standard Specifications for Roads, Bridge and Municipal Construction of the State of Washington, except that 25 percent of the material shall be retained on the 1/4-inch sieve. The material is to be used for backfill of trenches, around manholes and structures, within all existing streets and rights-of-way and elsewhere where excavated material is unsuitable for backfill.

E. Quarry Spalls - Drainage Ditches

This material shall conform to the Specifications for Quarry Spalls, Section 9-13.6 of the Standard Specification for Roads, Bridge, and Municipal Construction of the State of Washington, modified for 100 percent to pass the 6-inch screen.

Quarry spalls shall be placed in ditches and on slopes to be protected. After placement, the quarry spalls shall be compacted by tracked equipment making a minimum of three passes

WS-46 CONTROLLED DENSITY FILL

Controlled Density Fill (CDF) shall be a mixture of Portland cement, fly ash, aggregates, water and admixtures proportioned to provide a non-segregating, self-consolidating, free-flowing and excavatable material which will result in a hardened, dense, non-settling fill.

CDF shall be batched and mixed in accordance with Section 6-02.3 Standard Specifications for Road, Bridge, & Municipal Construction of the State of Washington. Materials are as follows:

1.	Portland Cement	AASHTO M85 or WSDOT/9-01
2.	Fly Ash	Class F
3.	Aggregates	WSDOT/9-03.1(2)B
4.	Water	WSDOT/9-25
5.	Admixtures	WSDOT/9-23.6

CDF shall be used in the following proportions for 1 cubic yard. Batch weights may vary depending on specific weights of aggregates.

Max. Gallons Of Mixing Water per Cubic Yard	50
Lbs. of Cement per Cubic Yard	50
Lbs. of Fly Ash per Cubic Yard	300
Lbs. of Dry Aggregate per Cubic Yard (Class 1 or 2 Sand per WSDOT 9-03.1(2)B	3,200
Compressive Strength	100 psi maximum at 28 days

CDF shall be batched to provide a flowable, non-segregating mix, with a slump between 6 and 8 inches.

CDF shall be discharged from the mixer by any reasonable means into the area to be filled. The CDF shall be brought up uniformly to the elevation shown on the Plans. CDF shall not be placed on frozen ground.

CDF patching, mixing, and placing may be started if weather conditions are favorable, when the temperature is at 34 degrees F and rising. At the time of placement, CDF must have a temperature of at least 40 degrees F. Mixing and placing shall stop when the temperature is 38 degrees F or less and falling. Each filling stage shall be as continuous an operation as is practicable.

For flowable CDF, compaction is not necessary for placement. The Developer may, as an option, adjust the water content only to obtain a 0 to 1 inch maximum slump mixture which if used shall be compacted in lifts not to exceed 12 inches. Compaction shall be accomplished by use of a hand vibratory plate or hoe-pack.

The Developer shall have a steel plate cover placed and anchored over the trench until the City determines the mixture is sufficiently cured, so that a permanent patch can be placed.

WS-47 STATE HIGHWAY AND STREAM CROSSINGS

All state highway, rail road, stream or other crossings as determined by the City where boring is required to complete the crossing shall be encased with steel casing. Steel casing shall be of sufficient diameter (minimum of 24 inches), size, and strength to enclose the pipe and to withstand maximum loading. Sizing and wall thickness of casing is subject to approval by the City. The carrier pipe shall be ductile iron, Class 52, restrained joint pipe unless otherwise approved by the City. Casing spacers shall be installed at each 10 feet of the pipeline. The spacers shall be Uni-Flange Series UFRCS 1300 or approved equal, sized to prevent uplift in the pipe. Sand backfill between the casing and the pipe shall be required. In order to prevent the sand from being washed from the casing, the ends of the casing shall be bricked and cemented or otherwise sealed after installation, backfill and testing of the pipe are complete.

WS-48 RESTORATION OF SURFACE IMPROVEMENTS

The restoration of various types of surface improvements shall be as described below.

The Developer shall be responsible to maintain all roadway and walkway areas until the permanent repair is accomplished. The Developer shall repair or replace all areas damaged or disturbed during construction.

A. Temporary Surface Repair

The Developer shall place a temporary surface repair immediately after backfill in all streets and driveways. The material shall be MC-2 asphaltic concrete commonly referred to as “cold mix.” The backfill shall be thoroughly compacted and brought to a smooth grade prior to placing the material.

B. Asphalt Concrete Pavement Repair

The width of all pavement cuts shall be approved by the City before removal of pavement. All pavement cuts shall be continuous and shall be made with a machine specially equipped for this purpose. No skip cutting will be allowed.

Materials shall conform with Section 9.03 of the Standard Specifications for Road, Bridge & Municipal Construction of the State of Washington. Asphalt treated base shall be used as shown on the Standard Detail. All asphalt treated base shall conform and be placed in accordance with the requirements of Section 4-06, Standard Specifications for Road, Bridge and Municipal Construction of the State of Washington. The penetration of the asphalt used shall be between 85 and 100, viscosity grade AR4000.

Asphalt used for pavement repair shall be asphalt concrete pavement Class “B” and shall conform and be placed in accordance with the requirements of Section 5-04, Standard Specifications for Road, Bridge and Municipal Construction of the State of Washington.

The penetration of the asphalt used shall be between 85 and 100, viscosity grade, AR4000.

All edges and joints of asphalt concrete pavement repair shall be sealed with asphalt cement. The asphaltic paint binder, or tack coat, shall conform in all respects to Section 5-04, Standard Specifications for Road, Bridge, and Municipal Construction of the State of Washington. After pavement is in place, all joints shall be sealed.

Existing monument cases, valve boxes, catch basins, manholes, cleanouts, or any other items shall be adjusted to grade at the top of the finished surface of the roadway or easement.

C. Crushed Rock Surfacing

Shoulders, gravel driveways, roadways and alleys shall be resurfaced with crushed surfacing, top course. Crushed surfacing shall be manufactured in accordance with the provisions of Section 9-03.9(3) of the Standard Specifications for Road, Bridge, and Municipal Construction of the State of Washington, and installed to a minimum thickness of 2 inches.

Special care shall be taken to ensure that the surface has been brought to a uniform grade prior to placement of the material. Immediately prior to placement of the gravel, the drainage ditch, shoulders and/or driveways shall be graded to the original smooth contours existing prior to the construction in the area. Spreading shall be done as soon as each load is placed. The Developer shall be required, as far as practical, to haul material over the surfacing as it is placed.

D. Cement Concrete Curb

Cement concrete curbs shall be installed in accordance with Section 8-04.3(1) of the Standard specifications for Road, Bridge, and Municipal Construction of the State of Washington.

Existing curbs and gutters that are damaged or removed in performing the Project within the trench sections or as designated by the City shall be replaced in kind with the same shape and dimensions.

E. Extruded Cement Concrete Curb

Extruded cement concrete curbs shall be installed as shown on the Plans and in accordance with Section 8-04.3(1)A of the Standard specifications for Road, Bridge and Municipal Construction of the State of Washington.

F. Cement Concrete Sidewalks

Cement concrete sidewalks shall be installed as shown on the Plans and Section 8-14 of the Standard Specifications for Road, Bridge, and Municipal Construction of the State of Washington.

G. Landscaped, Improved, and Unimproved Areas

Certain improvements and landscaping exist in and along the public rights-of-way including the adjacent private properties. Wherever such property is damaged, destroyed, or the use thereof is interfered with due to the operation of the Developer, it shall be immediately restored to its former condition by the Developer. Notice should be given to the property owner along the route of construction by the Developer advising them of the methods to be used to preserve and restore the improvements.

The construction areas not improved with surfacing or landscaping shall be restored to original grade and shape, smooth with no debris remaining in or adjacent to the site.

The area shall be hydro-seeded in accordance with Section 8-01 of the Standard Specifications for Road, Bridge, and Municipal Construction of the State of Washington.

WS-49 CLEANUP

The construction site shall be kept clear during the progress of the work. Before the work shall be considered complete, the Developer shall clean out ditches that may have been filled during the work, replace damaged surfacing, remove surplus materials and trash and dispose of brush, repair all damages, and otherwise leave the job in a neat, orderly, and workmanlike condition. Dust control shall be provided during the progress of the work and during cleanup.

The Developer shall keep existing roads and streets adjacent to or within the limits of the project open to and maintained in a good and safe condition for traffic at all times. The Developer shall remove, on a daily basis, any deposits or debris which may have accumulated on the roadway surface as a result of construction operations. Removal shall be performed on a more frequent basis should the City determine that such removal is necessary. Any damage resulting from the Developer's operation shall be repaired at no expense to the City.

WS-50 USE OF COMPLETED PORTIONS

The City shall have the right to take possession of and use any completed or partially completed portions of the work although the time may not have expired for completing the entire work, and this shall not be deemed acceptance of any of the work.

WS-51 FINAL INSPECTION

All material and completed work are subject to final inspection by the City, which shall have the right to subject any portion thereof to such tests as in the opinion of the City shall be necessary to determine whether the work complies with the Plans and Specifications.

WS-52 "AS-BUILT" DRAWINGS

The City will maintain "as-built" information about the project as it is constructed. This information will be made available to and utilized by the Developer's Engineer for preparation of "as-built" drawings. The "as-built" drawings shall be prepared at the Developer's expense.

C. POST CONSTRUCTION

WS-53 OWNERSHIP OF PLANS

The original Mylars, three copies and an electronic file of all "as-built" Plans prepared by the Developer's Engineer shall be delivered to the City as a condition of and prior to acceptance of the Project, and shall become the property of the City. Neither the Developer nor the Developer's Engineer shall have any rights of ownership, copyright, trademark or patent in respect to the Plans.

WS-54 LIENS

Prior to acceptance of the work, the Developer shall deliver to the City either a complete release of all liens that arise out of the performance of the work or evidence acceptable to the City that there are no liens filed against the work. If any lien arises or remains unsatisfied after acceptance of the work, the Developer shall reimburse the City for any costs incurred on account thereof.

WS-55 RECORDING

The City will not approve the Plat for recording until the entire underground portion of the water and/or sewer facilities have been installed, tested and in the case of sewers, televised; and a copy of the final plat to be recorded is delivered to the City for review of adequacy of easements. A copy of the final recorded plat and all necessary recorded easements shall be delivered to the City before service connections to the extension will be allowed.

WS-56 COMPLETION BOND

If the Developer completes the underground portion of the water and/or sewer system and desires water and/or sewer service prior to the final paving of streets within the development, or prior to final acceptance of such extension(s), and if approved by the City, then an additional cash completion bond shall be deposited with the City in an amount to be determined by the City to cover the cost of work yet to be completed in conjunction with the final paving, grading and transfer of ownership. An assignment of funds will be unacceptable.

WS-57 BILL OF SALE

Upon completion of the work and approval of the District, the Developer shall, as a condition of acceptance by the District, convey the work to the District by Bill of Sale, in accordance with the form attached as an appendix hereto.

END PART 1

PART 2

WATER MAINS

W-1 WATER MAIN PIPE

Water mains to be installed shall be ductile iron pipe for all sizes, unless specifically noted otherwise. The ductile iron pipe shall conform to AWWA C151 Standards, except the minimum nominal thickness shall be as follows:

4" - 0.29" (Class 52 for bell and spigot, Class 53 for threaded spools)
6" - 0.31" (Class 52)
8" - 0.33" (Class 52)
12" - 0.37" (Class 52)
16" - 0.40" (Class 52)

Grade of iron shall be 60-42-10. The pipe shall be cement-lined to a minimum thickness of 1/16 inch meeting NSF standards for potable water and the exterior shall be coated with an asphaltic coating.

Each length shall be plainly marked with the manufacturer's identification, year cast, thickness, class of pipe and weight. The pipe shall be furnished with mechanical joint or push-on joint, conforming to AWWA C111 Standards, except where otherwise noted as calling for flanged joints.

Polyethylene encased or "bagged" pipe, where shown on the Plans shall be minimum of 8 mil thick, tube bagged, in accordance with AWWA C105.

Restrained joint pipe, where shown on the Plans, shall be push-on joint pipe with "Field Lok" gaskets or TR FLEX as furnished by US Pipe, or approved equal.

The pipe manufacturer shall certify in writing that the inspection and all tests of the specified standards for both pipe and gaskets being supplied for this project have been made and that the results thereof comply with the requirements of the Standard.

Joints shall be "made-up" in accordance with the manufacturer's recommendations. Standard joint material, including rubber ring gaskets shall be furnished with the pipe. Materials shall be suitable for the specified pipe sizes and pressures. The pipe joint utilized shall be the patented "Tyton" joint.

Except where necessary, in making connections with other lines and unless authorized by the City, pipes shall be laid with bells facing in the direction of laying and for lines on an appreciable slope, the bells shall face upwards.
All pipe shall be delivered to the job site with water tight wrapping or pipe plugs. All pipe shall be carefully checked on delivery as well as before placing in the trench. Pipe shall be carefully bedded, joined and protected. It shall be laid to the line and grade established and at all times the interior kept free from dirt, gravel, and all other foreign matter. The open ends shall be wrapped or plugged and secured at any time pipe laying is not in progress.

Water mains shall be laid on a uniform grade and the Developer shall anticipate those places where additional depth is required to avoid certain utilities, and adjust the pipeline profile accordingly to maintain uniform grade.

Prior to making permanent connections to the existing system, the new water main including service lines shall have passed a pressure test, been adequately flushed, and finally passed the required bacteriological test.

All types of pipe shall be handled in a manner that will prevent damage to the pipe, pipe lining or coating. Pipe and fittings shall be loaded and unloaded using hoists and slings in a manner to avoid shock or damage, and under no circumstances shall they be dropped, skidded, or rolled against other pipe. Damaged pipe will be rejected, and the contractor shall immediately place all damaged pipe apart from the undamaged and shall remove the damaged pipe from the site within 24 hours.

Methods of handling shall be corrected by the Developer if the City determines that these methods are damaging to the pipe.

All pipe to be purchased and installed as a part of the Developers water system shall be delivered to the job site with water tight wrapping or pipe plugs. Furthermore, to comply with AWWA Standards, these pipe plugs or wrappings shall remain in place until the pipe is installed in the trench at which time one end plug would be removed for joining pipe ends.

If there is any pipe not meeting this requirement, the City shall reject it, or under special circumstances may allow that it be swabbed out with chlorine solution and capped before accepted by the City.

Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations, and any pipe or fitting that has been installed with dirt or foreign material in it shall be removed, cleaned, and relayed. A clean whiskbroom shall be used for this purpose and for brushing to remove foreign matter prior to joining of pipe ends. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or by other means approved by the City to ensure cleanliness inside the pipe.

Pipe shall be stacked in such a manner as to prevent damage to the pipe, to prevent dirt and debris from entering the pipe, and to prevent any movement of the pipe. The bottom tiers of the stack shall be kept off the ground on timbers, rails or other similar supports. Pipe on succeeding tiers shall be alternated by bell and plain end. Timbers 4-inches by 4-inches in size shall be placed between tiers and chocks shall be placed at each end to prevent movement. For safety each size of pipe shall be stacked separately.

W-2 WATER MAIN FITTINGS

All fittings shall be short-bodied, ductile iron complying with applicable AWWA C110 or C153 Standards. All fittings shall be cement-lined and either mechanical joint or flanged, as indicated on the Plans.

Fittings in sections shown on the Plans requiring restrained joints shall be mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc. MEGALUG, Romac Industries, Inc., Grip Ring Pipe Restrainer or approved equal. Stargrip Series 3000 mechanical joint restraint devices are not accepted or approved as equal.

Fittings shall be adequately “blocked” with poured-in-place concrete, within wooden forms shaped to establish a firm minimum bearing area, against an undisturbed earth wall as shown on the Standard Details. 4" x 4" minimum size Timber blocking may be permitted as temporary blocking, when utilized as forms outside the poured-in-place concrete when fittings are to be pressurized prior to the 24 hour minimum “set” time. The concrete thrust blocks must be in place at least 24 hours before beginning the pressure test, to allow the concrete to “set”. The strength of the concrete shall be 2,000 psi minimum.

All valves and all fittings requiring a concrete block shall first be covered with 4-mil Visqueen plastic sheets, before concrete is poured. The concrete shall not cover joints, bolt heads or nuts.

All bolts shall be coated with Armite Anti-Seize Compound No. 609, or equal, prior to installation.

Before cutting existing pipes, the Developer shall measure the pipe outside diameter to determine if pipe was manufactured to a diameter which is different than presently specified in /AWWA Standards, and if required, the Developer shall furnish alternate or additional fittings more compatible with the pipe outside diameter.

All connections to ductile or cast iron pipe shall be with ductile iron mechanical joint sleeves, or approved equal, except as shown on the Plans for mechanical joint tees, valves, etc.

All connections to pipe other than cast or ductile iron shall be with Romac, Smith-Blair, Dresser or Ford flexible couplings. The couplings shall have long middle rings and shall have a fusion-bonded epoxy coating. Coupling gaskets shall be Grade 60. The bolts and nuts shall be high strength, low alloy steel or electrogalvanized mild steel.
All joints in the pipe, fittings, valves, flexible couplings, and sleeves, shall be fully seated with small clearances allowed for pipe expansion. Where flexible couplings and sleeves are called for, the space between pipe ends shall not exceed one-quarter (1/4) inch.

When the space between pipe ends is excessive, a short section of pipe shall be inserted as a spacer ring to limit such pipe movement within the coupling or sleeve, to obtain the one-quarter (1/4) inch limitation stipulated herein.

W-3 VALVES

All valves 12 inch and smaller shall be resilient seated ductile iron gate valves except where shown on the Plans. All valves 16 inch and larger shall be ductile iron butterfly valves.

The valve manufacturer shall certify in writing that the inspection and all tests of the specified standards for the valves being supplied for this project have been made and that the results thereof comply with the requirements of the Standard.

A. Resilient-Seated Gate Valves

The gate valves shall be resilient seated ductile iron body valves with non-rising stems (NRS) opening counterclockwise and equipped with a 2-inch square operating nut. Valves shall meet the full requirements of the AWWA C509 or C515 Standards. The valves shall have double “O” ring stem seals which shall withstand the test pressure without leakage. Valves shall be rated at 250 pounds per square inch (psi), minimum working pressure and furnished with either flanged and/or mechanical joints as shown on the Plans. All surfaces, interior and exterior, shall be epoxy-coated, acceptable for potable water.

Valves shall be Mueller, M&H, Clow, American Flow Control Series 2500, U.S. Pipe or approved equal.

B. Butterfly Valves

The butterfly valves shall be either mechanical joint or flanged ductile iron body valves equipped with a 2-inch square operating nut and shall be of the tight closing, rubber seat type. Valves shall meet the full requirements of AWWA C504-87 Standards, Class 150-B except the valve shall be able to withstand 200 psi differential pressure without leakage.

Butterfly valves shall be Henry Pratt Company “Groundhog,” “Dresser 450,” or approved equal.

All valves shall be set with the operating stems vertical. The axis of the valve box shall be common with the projected axis of the valve operating stem. The tops of the adjustable valve boxes shall be set to the existing or established grade, whichever is applicable.

All valves with operating nuts located more than 3 feet-6 inches below finished grade shall be equipped with extension stems to bring the operating nut from 2 feet-0 inches to 1 foot-0 inches from finished grade.

The extension stem of the length required to meet field conditions shall be a manufactured unit with a 1-inch-diameter mild steel rod. At the top of the extension stem there shall be a 2-inch standard operating nut complete with a centering flange.

Valve boxes shall be equal to the "Rich 940-B" Model. The flared end of the valve box shall be set at the bottom elevation of the 2-inch operating nut to allow space for rocks to be moved laterally from the operation nut. The "ears" on the valve box top shall be aligned parallel in the direction of the branch the valve opens and closes.

The valve box shall be placed over the valve or valve operator in such a manner that the valve box does not transmit shock or stress loads to the valve. The casting shall not rest directly upon the body of the valve or upon the water main.

Any extension of the valve box shall utilize additional flared end valve box bottom sections or cast iron hub soil pipe. Other materials are not acceptable.

In areas where the valve box is not in concrete or asphalt a 24-inch by 24-inch by 4-inch cement concrete block shall be installed around the valve box at finished grade. The valve box shall be flush with the top and centered.

A fiberglass valve marker post shall be furnished and installed where directed. Valve marker posts shall be blue in color, 3.75 inches wide (flat), 60-inches long and furnished with a 3-inch by 3-inch high density white reflector (250 candle power) and a flexible anchor barb. Valve markers shall be Carsonite Utility Marker CUM 375.

Markers shall be placed at the edge of the right-of-way opposite the valve and set so as to leave 36 inches of the post exposed above grade. The size of the valve and the distance in feet and inches to the valve shall be noted with decals, typically designed for use on fiberglass boats, placed on the face of the post, using letters approximately 2-inches high. Each post shall include the following decal: "Caution Water Valve, Before Digging, Call 1-800-424-5555, Utility Underground Location Center."

W-4 TAPPING TEES AND TAPPING VALVES

The tapping sleeves shall be rated for a working pressure of 250 psi minimum and furnished complete with joint accessories. Tapping sleeves shall be constructed in two

sections for ease of installation and shall be assembled around the main without interrupting service.

Fabricated steel style sleeves shall be fusion bonded coated, acceptable for potable water, and shall be manufactured by JCM, Romac or approved equal. Size on size connections shall utilize stainless steel full circle tapping tee or DI MJ cut-in tee.

Tapping valves shall be resilient-seated ductile iron body gate valves provided with a standard mechanical joint outlet for use with ductile iron pipe and shall have oversized seat rings to permit entry of the tapping machine cutters. In all other respects, the tapping valves shall conform to the resilient seat gate valves herein specified with regards to operation and materials.

The tapping sleeve and valve shall be pressure tested to 200 psi (water) prior to tapping the main.

The installation of the tapping sleeves & valves and the tapping of the main shall be performed by a contractor that specializes in “Hot Taps” and is approved by the City.

W-5 AIR RELIEF VALVES

Air and vacuum relief assemblies shall be installed at high points on the water system as shown on the Plans or designated in the field by the City. The air relief assemblies shall be a combination air and vacuum valve, Crispin #UL-10, Valmatic 201-C or APCO 143C complete as shown on the Standard Detail.

W-6 BLOWOFF ASSEMBLIES

The blowoff assemblies shall be furnished and installed as shown on the Standard Detail.

Temporary blowoffs utilized by the Contractor for flushing the water main shall be of sufficient size to obtain 2.5 feet per second velocity in the main.

W-7 FIRE HYDRANTS

The fire hydrants shall be the break-away compression type, meeting AWWA C502-85 Standards, in which the valve will remain closed if the barrel is broken. The hydrants shall have a barrel diameter of not less than 8-1/2 inches, and the main valve opening shall be not less than 5-1/4 inches in diameter. The fire hydrants shall be equipped with two, 2-1/2-inch National Standard Thread (NST) hose nozzles and one, 4-1/2-inch NST pumper port. A permanent anodized Storz hydrant adapter and anodized Storz blind flange shall be installed on the 4-1/2-inch pumper port. Hydrants within the City of White Salmon fire service area and Fire District #3 shall be equipped with 5-inch Storz adapters. Branch connection shall be for 6-inch pipe, as noted on the Standard Details, and shall be mechanical joint.

Fire hydrants shall be Mueller Centurian (A-423), Clow Medallion, M&H Dresser “Reliant” (929) or Kennedy K81.
The Contractor shall furnish fire hydrants with the correct bury depth (trench depth), in accordance with the specified pipe depth and special conditions of the Project. The fire hydrants shall be installed to provide the mounting height above finished grade as shown on the Standard Detail. The hydrant shall be installed plumb on the vertical axis.

A 36-inch by 36-inch by 8-inch cement concrete block shall be installed with a broomed surface and finished edge at the finished grade line and shall be located 2 inches below the bury line of the hydrant. One quarter inch expansion strips shall be placed between hydrant barrel and concrete. Forms shall be removed from the block prior to acceptance by the City.

The hydrants shall be wire brushed, primed with one coat of Preservative All Metal Guard II and painted with two coats of Preservative Lux-Light Caterpillar Yellow.

Between the time that the hydrant is installed and the completed facility is placed in operation, the hydrant shall at all times, be wrapped in burlap, bagged, or covered in some other suitable manner as approved by the City, to clearly indicate that the hydrant is not in service.

The resilient seated ductile iron body gate valve shall have a flange by mechanical joint body, and be bolted to the main line tee.

The connecting pipe between the fire hydrant and gate valve shall be 6-inch ductile iron restraint joint pipe and shall not exceed 50 feet in length. The fire hydrant and gate valve shall be restrained with a mechanical joint restraint device as indicated in Water Main Fittings. In addition to this, the hydrant and tee shall be fully blocked with concrete.

Hydrant guard posts, where shown on the Plans or required by the City, shall be 9-inch-diameter by 6-foot-long reinforced precast concrete units and the portion above ground painted similar to requirements for the fire hydrant.

The Developer shall install a raised blue reflector on the final lift of asphalt in line with the fire hydrant in accordance with City and/or fire district requirements.

W-8 SERVICE CONNECTIONS

Individual services to each structure and/or property shall be installed and connected to the new water mains.

Upon completion of the installation of the water main (before testing and disinfection) services shall be installed by connecting to the water main and extending the service line

to the property line as shown on the Standard Details. Service lines for residential property shall be Type “K” 1-inch (minimum size) copper service lines meeting the ASTM Specifications B-88-47. Larger service lines shall be of the type and style as designated in the Standard Details and shown on the Plans.

Commercial and multi-family projects that require larger than 1-inch meters shall provide 1-1/2-inch or 2-inch meter service installations per City standards as shown on the Standard Details. Two inch and smaller meters are supplied by the City. Three inch and larger meters fall into a different design criteria and will be specifically designated as needed and supplied by the Developer.

Corporation stops and the single meter shut-off valves shall be “Mueller” or “Ford” of the type and style noted on the Standard Details or approved equal. Included as a part of the service connection shall be the furnishing and installation of the meter box complete with a cast iron traffic lid, set flush with the proposed finished grade of the lot in the designated location near the property line, all as shown on the Standard Details. The angle type of shut-off valve shall be set inside the meter box in a proper position for installation of a future meter by the City. Upon completion of each service line as indicated herein, the Developer shall flush the service line to remove the debris that may interfere with the future meter installation, and further verify that the service line has full pressure and flow to the meter box. Meter boxes shall be marked with a painted 2 x 4 stake as shown on the Standard Details.

Service lines between the main and the property line shall be placed at a trench depth sufficient to maintain a 3-foot cover over the top of the service line for its full length, taking into consideration the final finished grade of the proposed street and the final finished grade of any storm ditches.

W-9 LARGE METER AND TESTS

If extensions require water meters 3 inches or larger, then such entire meter installations, including but not limited to, valves, piping, vaults, drain lines and meters shall be installed by the Developer conforming to City standards. The Developer shall pay the meter test fee established by the City and shall sign a City meter application form and pay all fees and charges due at that time.

W-10 FIRE LINE SERVICES

If extensions require a fire line service, then such entire installation, including but not limited to, valves, piping, vaults, drain lines and meters shall be installed by the Developer conforming to City standards. The service shall have a Double Check Detector Backflow Prevention Assembly installed in a utility vault at the ROW/Property line with a 6” PVC gravity drain to storm. Fire line service shall terminate in the structure to be served as shown on the City’s Riser Detail.

W-11 HYDROSTATIC PRESSURE TEST

The water mains shall be hydrostatically tested before being placed in service. Water for testing must be obtained by the Developer by arrangement with the City. A positive displacement type pump shall be furnished by the Developer for the testing. Feed for the pump shall be from a disinfected clean container, wherein the actual amount of "makeup" water can be measured.

Upon completion of sections of the pipe installation, the water main shall be pressure tested in segments of 1,000 lineal feet or less. The test pressure shall be either 200 pounds per square inch, or twice the system pressure, using the greater value, and shall maintain the test for a period of not less than 2 hours.

Pressure testing against existing valves shall not be permitted unless authorized by the City.

The Developer shall provide temporary plugs, caps and blocking as required to pressure test and disinfect the new water main prior to making connections to the existing system.

Concrete thrust blocking for fittings shall be in place and the concrete "set" sufficiently to withstand the test pressure before starting the test.

All pressure tests shall be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. After this basic pipe line test has been completed, each valve shall be tested including the hydrant auxiliary valve by closing each in turn and relieving the pressure beyond. This test of the valves will be acceptable if there is no immediate loss of pressure on the gauge when the pressure comes against the valve being checked. The Developer shall verify and assure that the pressure differential across the valve does not exceed the rated working pressure of the valve.

Prior to calling for the City to witness the pressure test, the Developer shall first perform a satisfactory pressure test. The allowable leakage rate per thousand feet of each size pipeline is as follows:

Allowable Leakage

Pipe Size	Gallon per hour per 1,000 Ft. @ 200 psi
6"	0.64
8"	0.85
10"	1.06
12"	1.28
16"	1.70

Any leakage caused by defective workmanship or materials shall be repaired, and the line shall again be tested to full compliance.

All visible leaks in pipelines or fittings shall be repaired even if the test results fall within the allowable leakage.

W-12 DISINFECTION OF WATER MAINS

Water mains and appurtenances shall be disinfected in accordance with AWWA C651 before being placed in service. Water for disinfection must be obtained by the Developer by arrangement with the City.

The method of placing calcium hypochlorite granules in the water main as it is being installed is acceptable if the pipe and appurtenances are kept clean and dry during construction.

The calcium hypochlorite granules contain approximately 65 percent available chlorine by weight. The minimum amount of calcium hypochlorite granules placed at the beginning and in each 500 feet of pipe is as follows:

Pipe Size	Calcium Hypochlorite Granules
6"	1.0 oz.
8"	2.0 oz.
12"	4.0 oz.
16" and larger	8.0 oz.

When the line is completed and ready to disinfect, water shall be allowed to flow in slowly, until it appears at the far end of the line so as not to displace the disinfecting agent. The system shall then be allowed to stand for at least 24 hours. The line shall then be flushed through the fire hydrants until a test shows the CL2 residual no longer exceeds distribution system residual.

In all instances, the Developer shall utilize a state approved double check valve type backflow prevention device to protect the potable water supply while filling, flushing and disinfecting the particular water main.

In the process of chlorinating newly laid water pipe, all valves, fire hydrants and other appurtenances shall be operated while the pipeline is filled with the chlorinating agent.

The Developer is herein advised that prior to making any restoration or permanent connections to the existing water mains the Developer shall first demonstrate to the City that the new water main has adequately passed a pressure test, been adequately flushed, and finally passed the required bacteriological test.

In all disinfection processes, the Developer shall take particular care in flushing and wasting the chlorinated water from the mains to assure that the flushed and chlorinated water does no physical or environmental damage to property, streams, storm sewers or

any waterways. Flushing water must be disposed of in accordance with Washington State Department of Ecology Standards. Flushing water shall require dechlorination or disposal to sewer system to prevent damage to the affected environment, particularly aquatic and fish life of receiving streams.

Before placing the lines in service, a satisfactory bacteriological report or approval shall be received from a State approved laboratory on samples collected from representative points in the new system. The City shall collect all samples for the bacteriological tests. However, the Developer shall notify the City requesting collection of samples 2 working days in advance, and schedule on days wherein samples can be conveniently processed by a State Department of health approved laboratory. If any of the pipeline materials are replaced thereafter, then that section shall again be disinfected, pressure tested and tested for bacteriological count.

If disinfection of mains by the above methods prove unsatisfactory and the lab report indicates any type of bacteria count, then the Developer shall re-chlorinate using other methods in accordance with AWWA C691 and approved by the City.

W-13 CONNECTIONS TO EXISTING SYSTEMS

All cut-in connections to the existing system shall be made after a successful pressure test of the new main has been witnessed by the City and after a purity test has been satisfactorily evidenced.

Size on size connections shall utilize stainless steel full circle tapping tee or DI cut-in tee. All materials contacting existing mains shall be chlorinated prior to use.

Where it is necessary to shut-off the existing (or new) mains to make a connection, the Developer shall notify the City 72 hours or 3 working days in advance of such shut-off, and the City will notify customers of the shut-off, provide temporary services to critical customers and shut-off the mains. Connections shall be performed between the hours of 9:00 a.m. and 4:30 p.m. only. No cut-in connections or connections of new piping to the existing piping shall be scheduled for Fridays or Mondays. Once the water has been shut-off, the Developer shall diligently pursue the connection to completion, so that the time required for the shut-off may be held to a minimum. The City will notify customers in the area of the scheduled shut-off.

The required connections shall not be started until all of the materials, equipment and labor necessary to properly complete the work are assembled on the site. All connections shall be completed the same day they are started. The Developer shall time its operations so that water will not be shutoff overnight or over weekends or holidays.

The location, type and size of existing facilities have been determined from available records and are approximate. It is anticipated that connections to these existing facilities

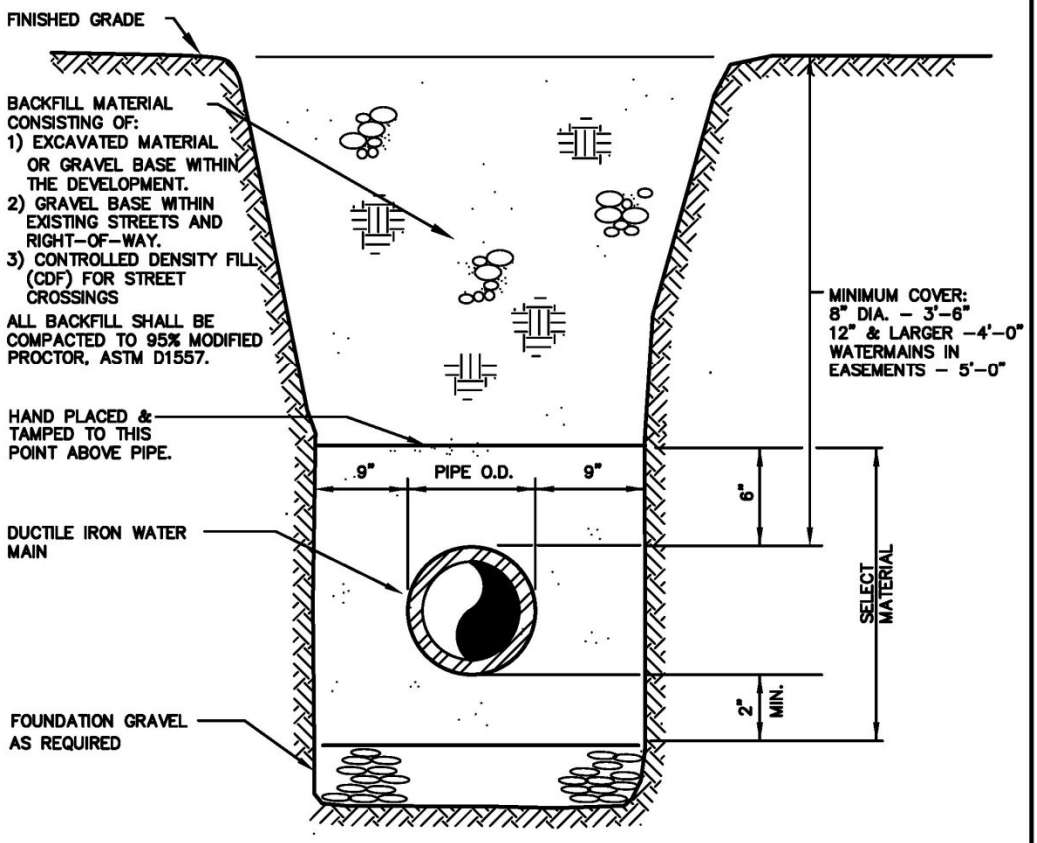
may be made, in general, as shown on the Plans, except where adjustments are required for vertical and horizontal alignment.
It shall be the responsibility of the Developer to determine the exact horizontal and vertical location of connections, ascertain the type and size of existing facilities and determine potential conflicts prior to starting work on any connection. Alternatives shall be provided as required to complete the connection detail.

Connections to existing facilities shall be made with the use of fittings, valves, flexible couplings, solid sleeves, shackling and other miscellaneous fittings, including thrust blocks as shown on the Plans and with additional pipe or fittings as approved by the City.

Where connections are made to existing facilities and it is impractical to use the methods described herein to disinfect the section between the existing water main and the point of installation of the new water main (valve or temporarily plugged line) the Developer shall clean and swab the pipe, fittings and valves with a minimum 5 percent chlorinated solution immediately before making said connection and thereby disinfect the necessary connection.

All pipe and fittings used for the connection shall be clean and disinfected. The Developer shall take extra precautions to ensure the tightness of the connections, nuts and bolts. The existing water main shall be placed back into service by the City and the connection observed for leakage by the City prior to backfilling the pipe.

END PART 2



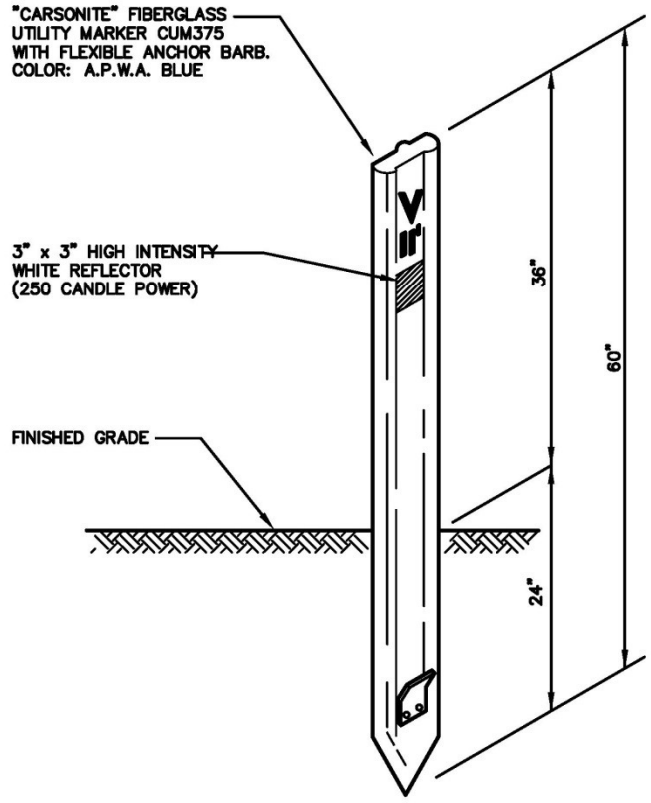
NOTES:

1. THE DEVELOPER SHALL PROVIDE THE CITY WITH LABORATORY TEST RESULTS INDICATING COMPACTION OF THE TRENCH MEET THE REQUIREMENT OF 95% MODIFIED PROCTOR, ASTM D1557.
2. DURING BACKFILL OPERATIONS, FURNISH AND INSTALL 3" WIDE METALLIC MARKER TAPE WITH 3 FT. OF COVER OVER WATER MAIN.

WATER MAIN TYPICAL TRENCH SECTION

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W-D1



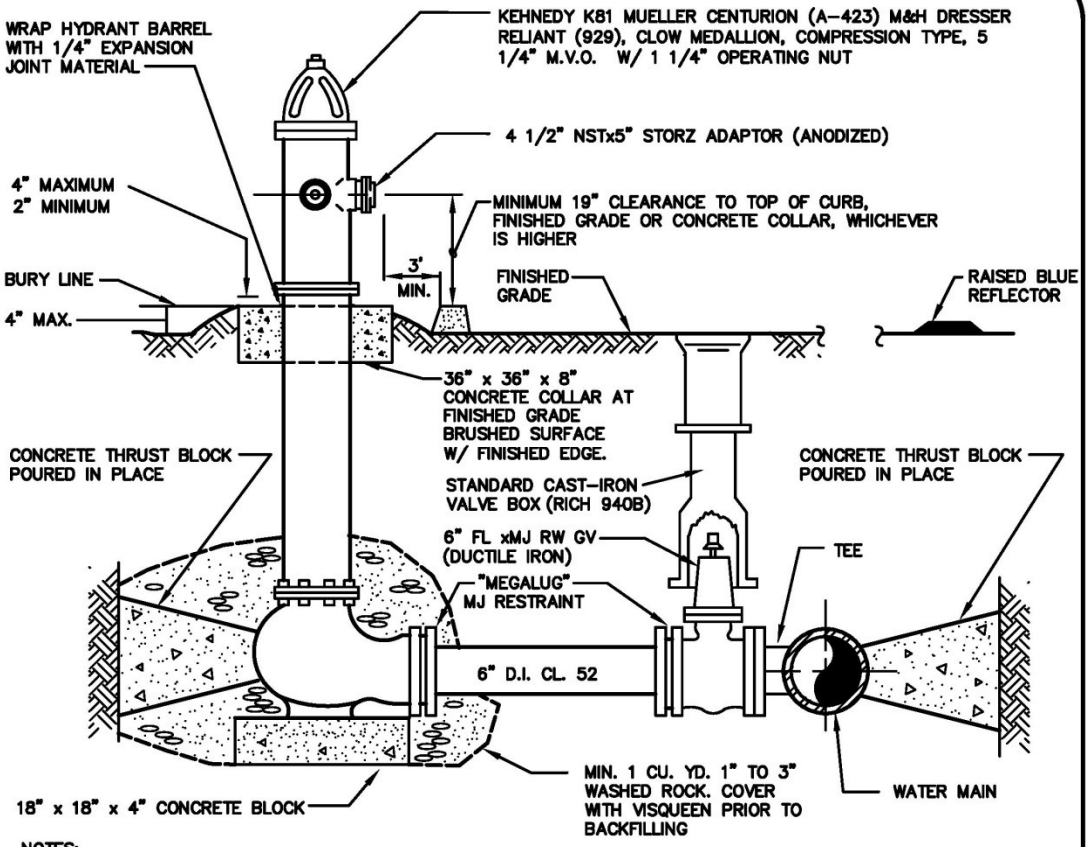
NOTES:

1. THE LETTER "V" AND THE DISTANCE IN FEET TO THE VALVE SHALL BE ON THE POST WITH 2" HIGH DECALS DESIGNED FOR USE ON FIBERGLASS BOATS.
2. EACH POST SHALL INCLUDE THE FOLLOWING DECAL: "CAUTION WATER VALVE, BEFORE DIGGING, CALL 1-800-424-5555, UTILITY UNDERGROUND LOCATION CENTER."

VALVE MARKER

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W-D2



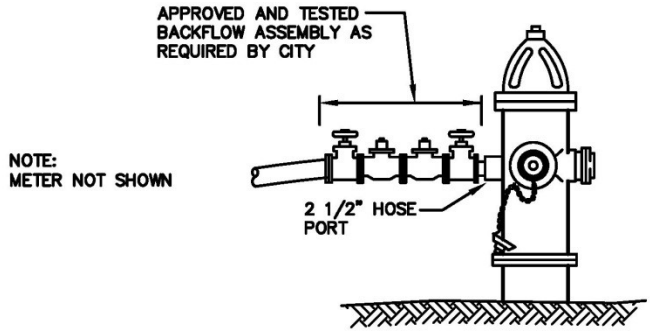
NOTES:

1. AFTER INSTALLATION, HYDRANT SHALL BE WIRE BRUSHED, PRIMED WITH BENJAMIN MOORE "PREP ALL UNIVERSAL METAL PRIMER" AND FIELD COATED WITH 2 COATS OF BENJAMIN MOORE "RUST SCAT SAFETY RED" PAINT.
2. WHEN HYDRANT SPOOL EXCEEDS 18', USE FULL CIRCLE MJ REPAIR SLEEVE WITH 'MEGALUGS' OR FIELD LOK GASKETS. MAXIMUM LENGTH IS 50'.
3. HYDRANTS SHALL BE BREAK-AWAY TYPE IN WHICH VALVE WILL REMAIN CLOSED IF BARREL IS BROKEN.
4. PROVIDE MINIMUM 3'-0" CLEARANCE AND LEVEL AREA AROUND HYDRANT.
5. GUARD POSTS MAY BE REQUIRED BY THE CITY. SEE GUARD POST DETAIL FOR ADDITIONAL REQUIREMENTS.
6. DISTANCE IN FEET TO THE VALVE BOX SHALL BE PLACED AT THE BARREL, BELOW THE PUMPER PORT, WITH 2" HIGH DECALS DESIGNED FOR USE ON FIBERGLASS BOATS.
7. RAISED BLUE REFLECTOR IN ACCORDANCE WITH THE FIRE DISTRICTS REQUIREMENTS
8. 3' MINIMUM CLEARANCE FROM BACK OF CURB OR BACK OF SIDEWALK TO ANY PART OF HYDRANT.

FIRE HYDRANT ASSEMBLY

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W-D3



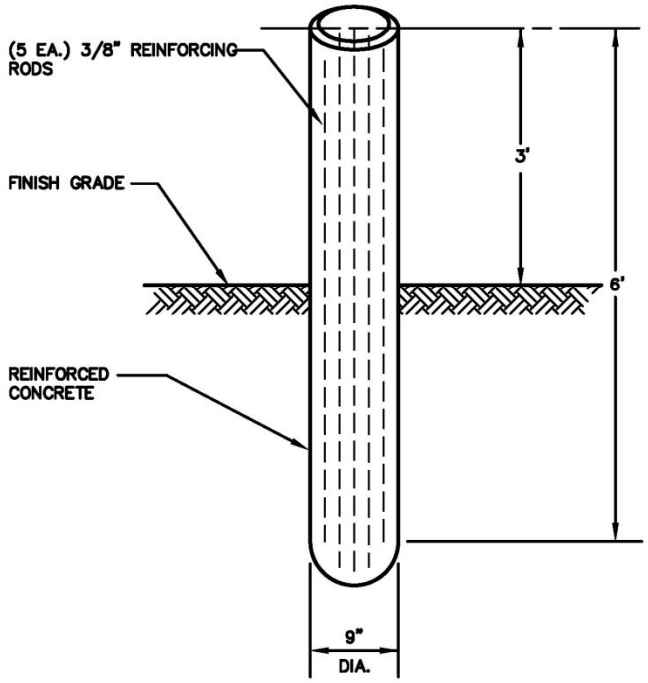
HYDRANT USE PROCEDURES

1. ACQUIRE HYDRANT METER FROM THE CITY OF WHITE SALMON.
2. THERE SHALL BE AN ACCEPTABLE WASHINGTON STATE APPROVED BACKFLOW ASSEMBLY FURNISHED AND INSTALLED BY CONTRACTOR. A HYDRANT METER SHALL BE OBTAINED FROM CITY. (NOT SHOWN ABOVE)
3. OPENING & CLOSING OF HYDRANT VALVE SHALL BE WITH AN ACCEPTABLE HYDRANT WRENCH.
4. THERE SHALL BE AN AUXILIARY VALVE ATTACHED TO THE 2 1/2" HOSE PORT OF THE HYDRANT.
5. THE HYDRANT VALVE SHALL BE FULLY OPENED AND THE WATER USE CONTROLLED EXCLUSIVELY BY THE AUXILIARY VALVE.
6. THE AUXILARY VALVE SHALL BE OPERATED IN A SLOW MANNER TO PREVENT UNDUE EXCESSIVE PRESSURE ON THE WATER SYSTEM.
7. ANY VIOLATION OF ANY OF THE ABOVE SHALL BE SUBJECT TO A FINE.

HYDRANT USE

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W–D4



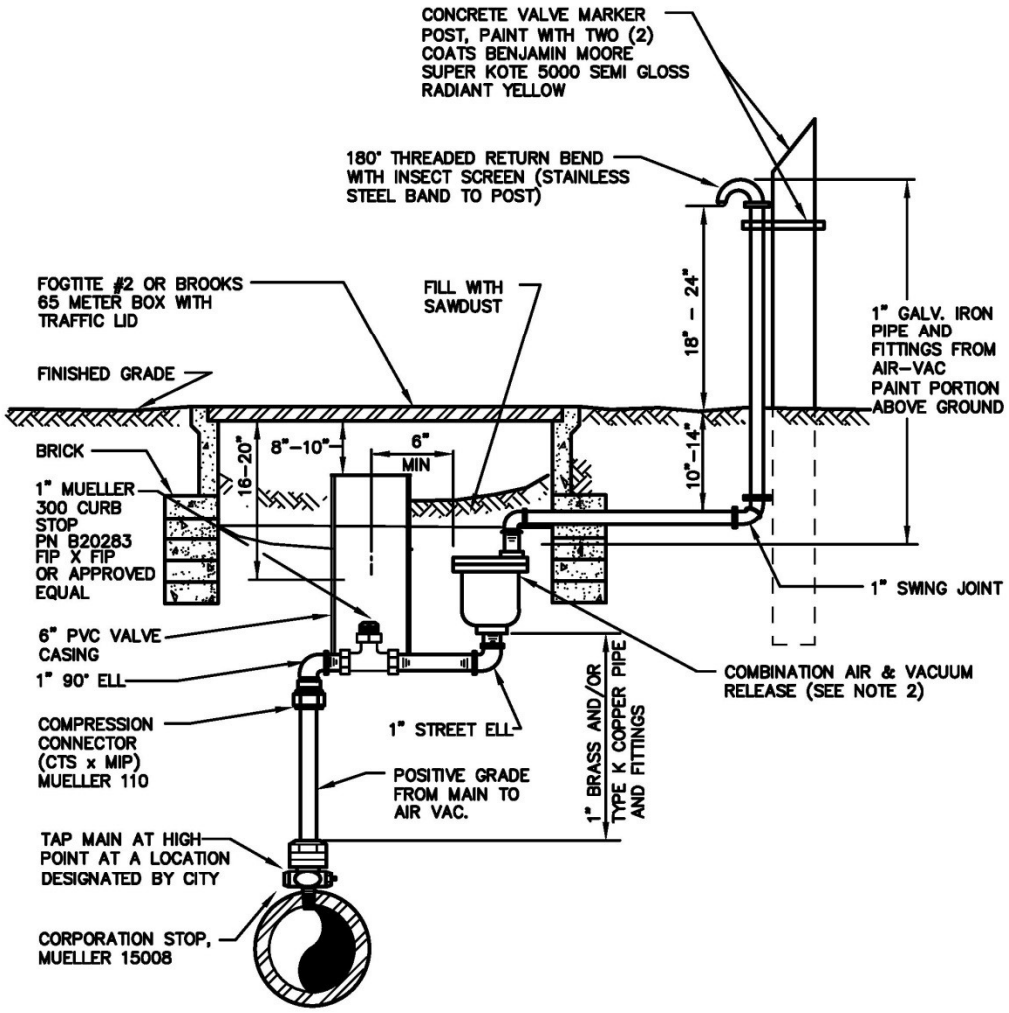
NOTES

1. GUARD POSTS SHALL CONSIST OF REINFORCED 9" DIA. PRECAST UNIT.
2. THE NUMBER AND CONFIGURATION OF THE GAURD POSTS MAY BE 2, 3, OR 4 AND SHALL BE DETERMINED BY THE CITY BASED ON FIELD CONDITIONS.
3. GUARD POSTS SHALL BE PAINTED WITH TWO (2) COATS OF PAINT TO MATCH HYDRANT

GUARD POST

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W–D5



NOTES:

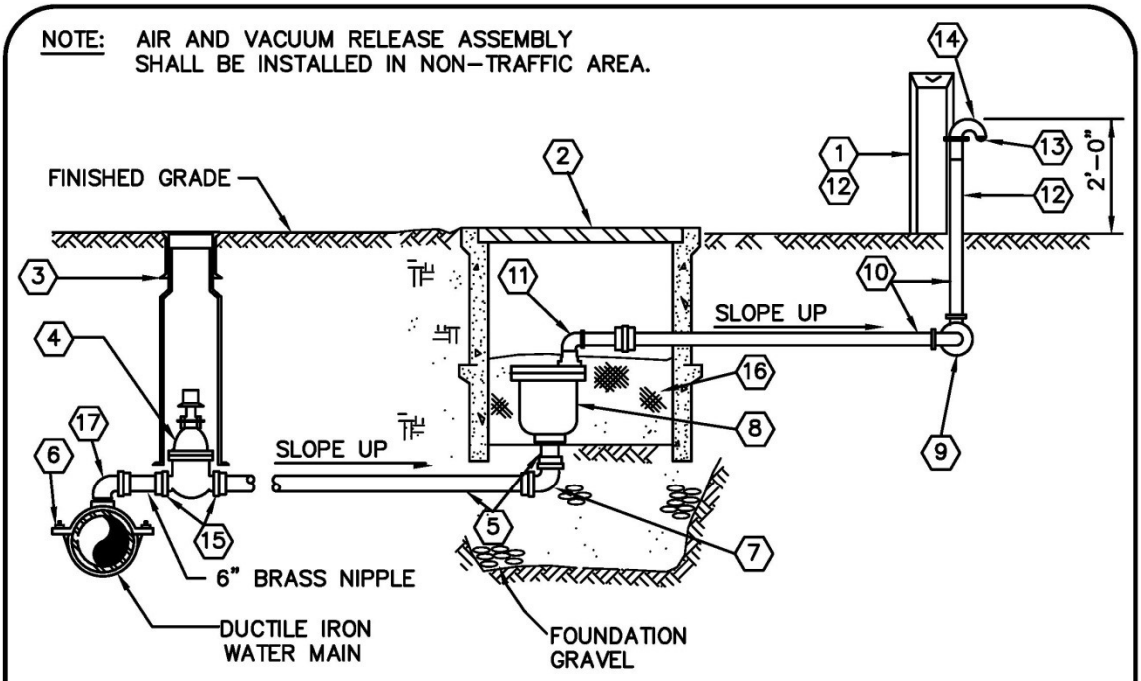
1. AIR-RELIEF ASSEMBLY LOCATION SHALL BE AT ALL HIGH POINTS OF THE SYSTEM.
2. APPROVED COMBINATION AIR & VACCUM RELEASE ASSY'S:
   a. CRISPEN UL-10
   b. VALMATIC 201-C
   c. APCO-143C

1'' AIR RELEASE ASSEMBLY

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W-D6

NOTE: AIR AND VACUUM RELEASE ASSEMBLY SHALL BE INSTALLED IN NON-TRAFFIC AREA.



1. CONCRETE VALVE MARKER POST
2. CONC. METER BOX, FOGTITE # 2 OR BROOKS 65
3. CAST IRON VALVE BOX
4. 2" AWWA RESILIENT SEAT GATE VALVE THD X THD, WITH OPERATING NUT
5. 2" TYPE "K" COPPER TUBING OR BRASS
6. DOUBLE STRAP STAINLESS STEEL SERVICE CLAMP
7. 90° BEND MUELLER No. H-15526 COMPRESSION X COMPRESSION
8. 2" COMBINATION AIR & VACUUM RELEASE ASSEMBLY; A. APCO MODEL 144. B. CRISPIN MODEL CRAL 2. C. VALMATIC
9. 2, 2"X90° ELL, GALV. SWING JOINT
10. 2" GALV. IRON PIPE (FIELD LOCATE NEXT TO EXISTING PROPERTY LINE).
11. 2"X90° ELL (GALV.)
12. PAINT PORTION ABOVE GROUND WITH TWO COATS OF BENJAMIN MOORE SUPER KOTE 5000 SEMI GLOSS RADIANT YELLOW
13. 2" BEEHIVE STRAINER
14. 2" OPEN PATTERN RETURN BEND
15. STRAIGHT COUPLING, MUELLER No. H-15428 COMPRESSION TO M.I.P.
16. SAWDUST OR VERMICULITE
17. 90° BEND MUELLER No. H-10096 FEMALE X M.I.P.

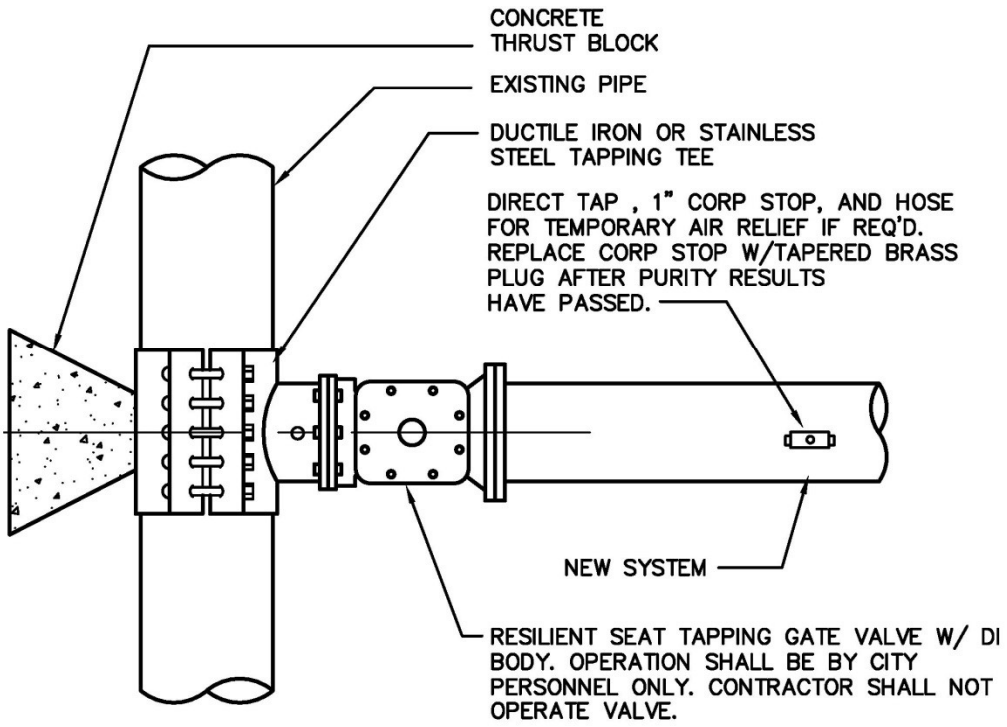
NOTES:

1. ALL PIPING BETWEEN DOUBLE STRAP SADDLE AND INLET SIDE OF COMBINATION AIR AND VACUUM ASSEMBLY SHALL BE COPPER OR BRASS
2. TAP WATER MAIN AT HIGH POINT, LOCATION TO BE DETERMINED BY THE CITY

7/18 W-D7

2" AIR RELEASE ASSEMBLY

CITY OF WHITE SALMON
STANDARD DETAILS



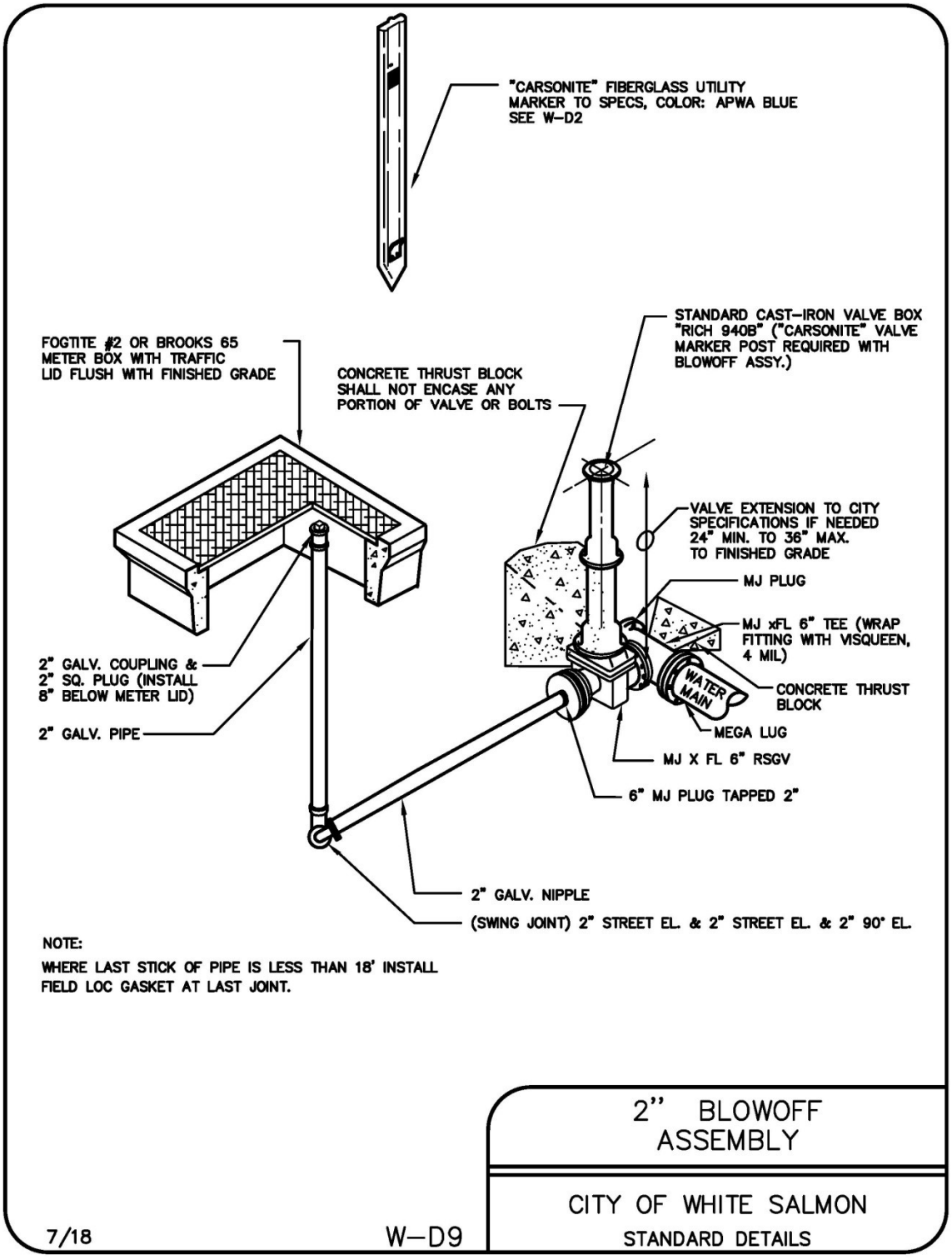
NOTES:

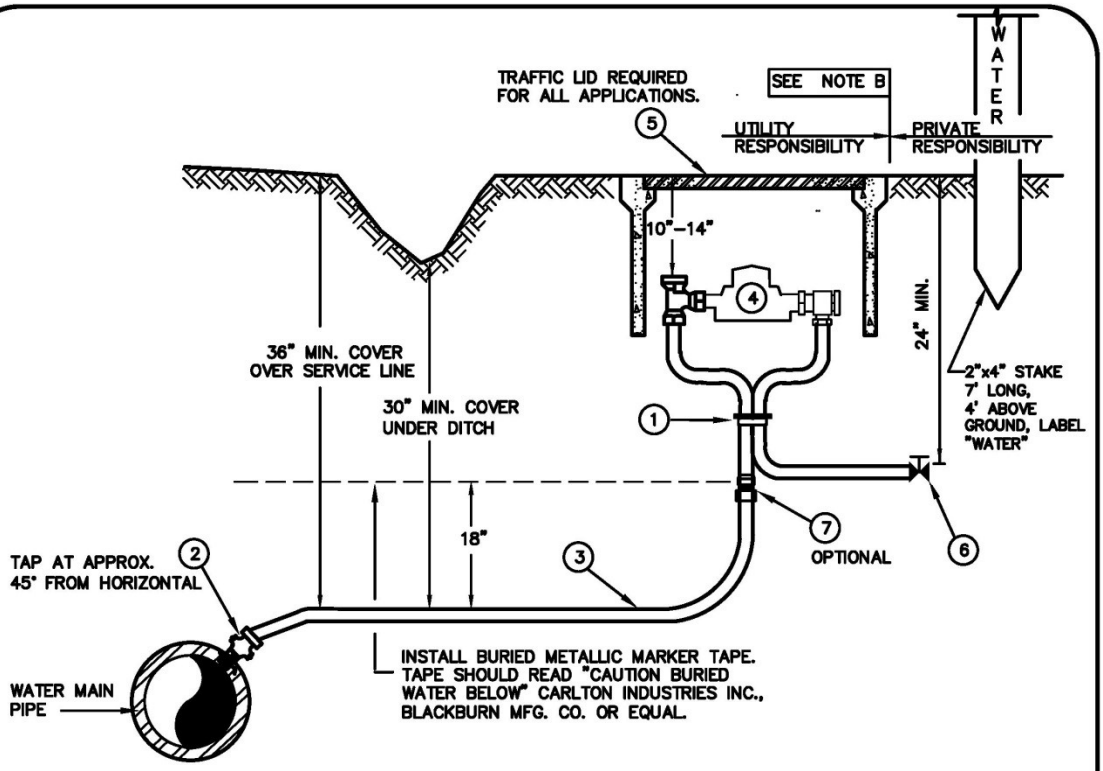
1. SIZE–ON–SIZE TAPPING TEES SHALL BE STAINLESS STEEL FULL CIRCLE MECHANICAL SLEEVE.
2. DUCTILE IRON TAPPING TEES SHALL BE ALLOWED IF TAP IS AT LEAST 2" SMALLER IN DIAMETER THAN THE EXISTING WATER MAIN.
3. TAPPING TEES SHALL BE PRESSURE TESTED TO 200 PSI
4. CONNECTIONS NOT ALLOWED ON FRIDAYS, HOLIDAYS, OR WEEKENDS

WET TAP CONNECTION

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W–D8


"CARSONITE" FIBERGLASS UTILITY MARKER TO SPECS, COLOR: APWA BLUE SEE W-D2
STANDARD CAST-IRON VALVE BOX "RICH 940B" ("CARSONITE" VALVE MARKER POST REQUIRED WITH BLOWOFF ASSY.)
FOGTITE #2 OR BROOKS 65 METER BOX WITH TRAFFIC LID FLUSH WITH FINISHED GRADE
CONCRETE THRUST BLOCK SHALL NOT ENCASE ANY PORTION OF VALVE OR BOLTS
VALVE EXTENSION TO CITY SPECIFICATIONS IF NEEDED 24" MIN. TO 36" MAX. TO FINISHED GRADE
MJ PLUG
MJ xFL 6" TEE (WRAP FITTING WITH VISQUEEN, 4 MIL)
2" GALV. COUPLING & 2" SQ. PLUG (INSTALL 8" BELOW METER LID)
WATER MAIN
CONCRETE THRUST BLOCK
2" GALV. PIPE
MEGA LUG
MJ X FL 6" RSGV
6" MJ PLUG TAPPED 2"
2" GALV. NIPPLE
(SWING JOINT) 2" STREET EL. & 2" STREET EL. & 2" 90° EL.
NOTE:
WHERE LAST STICK OF PIPE IS LESS THAN 18' INSTALL FIELD LOC GASKET AT LAST JOINT.
2'' BLOWOFF ASSEMBLY
CITY OF WHITE SALMON
STANDARD DETAILS
7/18
W-D9



NO.	ITEM	MATERIAL	SIZE	APPROVED MODELS	
1	METER SETTER	COPPER	1"	FORD: VBH 94–15 W–11–44AVH WITH VERTICAL INLET MUELLER: B–24104–2	
2	CORPORATION STOP	FOR COPPER SERVICE	1"	FORD: FB–1000–4–Q	MUELLER: B–25008
3	DIAMETER OF PIPE SHALL MATCH METER SIZE	COPPER	1"	FEDERAL SPEC. WW–T–799. TYPE K ASTM SPEC. B88, TYPE K AWWA SPEC. 7S–CR, TYPE K	
4	METER (FURNISHED BY CITY)				
5	METER BOX			SIGMA RAVEN RMB1324–SW WITH TRAFFIC LID OR APPROVED EQUAL	
6	1" FIP BRASS GATE VALVE		1"		
7	COPPER X IP ADAPTOR		1"	FORD: C–8433–Q	MUELLER: H–14227

NOTES:

A. SPLICES – NOT ALLOWED UNLESS APPROVED BY THE CITY. USE MUELLER 110 OR FORD QUICK JOINT.

B. OWNERS ARE RESPONSIBLE FOR INSTALLING PRESSURE REDUCER ON THEIR SYSTEM TO PROTECT THEIR FACILITIES FROM HIGH PRESSURE.

C. SURFACE RESTORATION IN ACCORDANCE WITH JURISDICTIONAL AUTHORITY.

D. 4" OF BEDDING REQUIRED ON ALL COPPER. SAND ONLY.

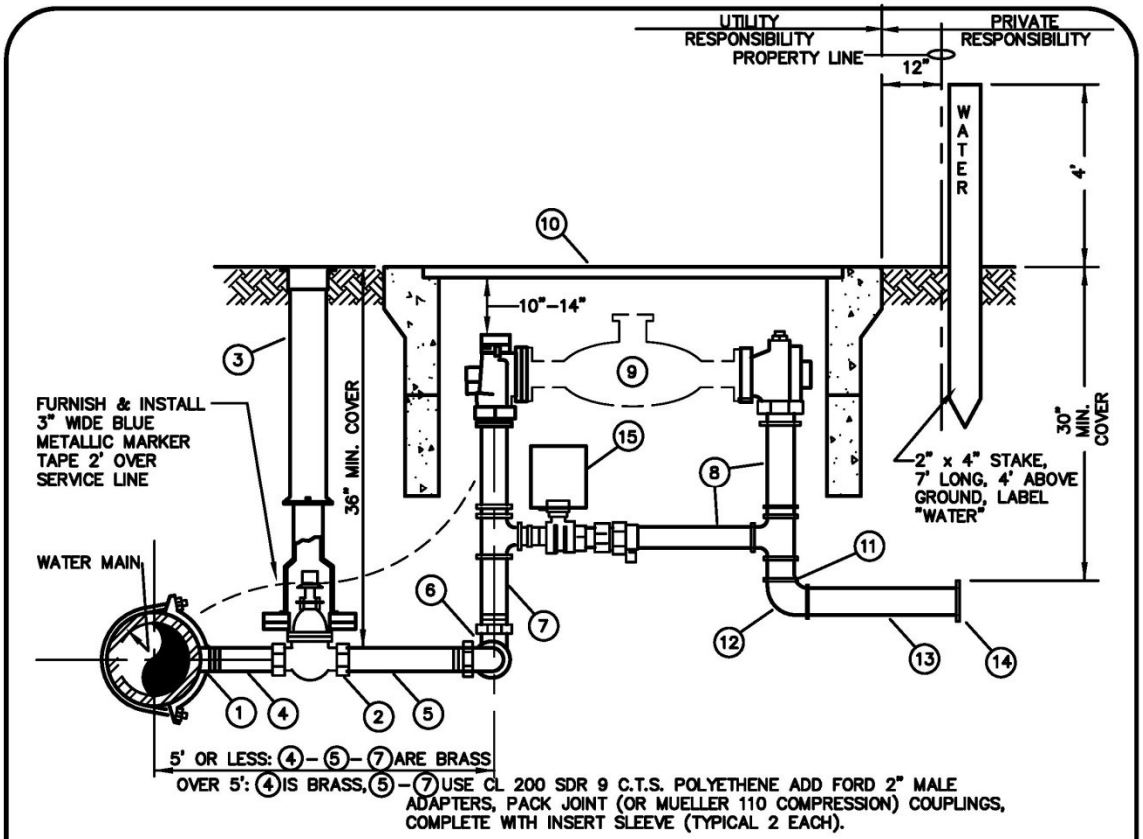
7/18

W–D10

1" WATER SERVICE INSTALLATION

CITY OF WHITE SALMON

STANDARD DETAILS

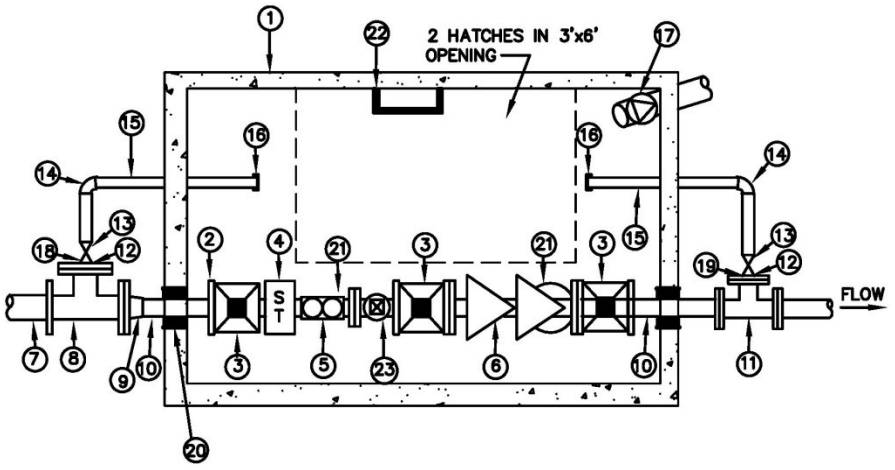


NO.	ITEM
1	ROMAC STYLE 202S STAINLESS STEEL DOUBLE STRAP TYPE SADDLE
2	2" RESILIENT WEDGE GATE VALVE WITH 2" OPERATING NUT
3	STANDARD CAST-IRON VALVE BOX (RICH NO. 940)
4	BRASS NIPPLE (3" MIN., 6" MAX.)
5	NIPPLE (SEE NOTE ABOVE)
6	BRASS SWING JOINT (SEE NOTE ABOVE)
7	NIPPLE (SEE NOTE ABOVE)
8	METER SETTER, 2" FORD VBH66-12B WITH METER SPACER (LENGTH DETERMINED BY CITY PRIOR TO INSTALLATION)
9	METER (FURNISHED BY CITY) 17 1/4" LONG
10	METER BOX, NO.2 FOG TITE OR BROOKS NO. 65, WITH STEEL TRAFFIC COVER (FURNISH 2 BOXES).
11	2" BRASS NIPPLE
12	2" BRASS 90° EL
13	2" x 12" BRASS NIPPLE
14	2" CAP
15	6" PVC PIPE OVER BY-PASS VALVE.

2" WATER SERVICE INSTALLATION

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W-D11



NO.	DESCRIPTION
1	UTILITY VAULT 4484–LA OR APPROVED EQUAL
2	UNIFLANGE ADAPTER
3	3" RWGV
4	3" STRAINER
5	MASTER METER 3" OCTAVE METER W/RADIO READ REGISTER
6	STATE HEALTH DEPT. APPROVED 3" DOUBLE CHECK VALVE ASSEMBLY
7	4" DIP
8	4" TEE (MJ X FL) W/MEGA LUGS
9	4" X 3" REDUCER (4" PE X 3" MJ) W/MEGA LUG
10	3" DIP
11	3" TEE (MJ X FL) W/MEGA LUGS
12	2" BRASS CLOSE NIPPLE
13	2" RWGV W/STANDARD VALVE BOX AND COVER
14	2" BRASS ELBOW
15	2" THREADED BRASS PIPE
16	2" BRASS CAP
17	6" PVC DRAIN TO DAYLIGHT OR CB. MINIMUM SLOPE 1%. SCREENS AT BOTH ENDS W/BACKWATER VALVE IN VAULT
18	4" BLIND FLANGE TAPPED 2"
19	3"' BLIND FLANGE TAPPED 2"
20	NON SHRINK WATER TIGHT GROUT, INLETS AND OUTLETS
21	PLACE PIPE SUPPORTS STANDON S–92 OR EQUAL UNDER ASSEMBLY IN TWO PLACES
22	GALV STEEL LADDER, LOCATE AS DIRECTED BY CITY, SECURE TO VAULT
23	3" TEE (FL), 3" BLIND FLANGE TAPPED 2" (FIP), 2" CLOSENIPPLE BRASS, 2" BALL VALVE, 2" MIPx 2 1/2" NST HOSE NOZZLE, 2 1/2" NST CAP

* LARGER SERVICES REQUIRE 3" FITTINGS AND PIPE BE REPLACED WITH LARGER/LIKE SIZE.

** 4" DIAMETER AND SMALLER DIP SHALL BE CLASS 53 IF USED IN A THREADED APPLICATION.

7/18

W–D12

3" AND LARGER WATER SERVICE AND INSTALATION

CITY OF WHITE SALMON
STANDARD DETAILS

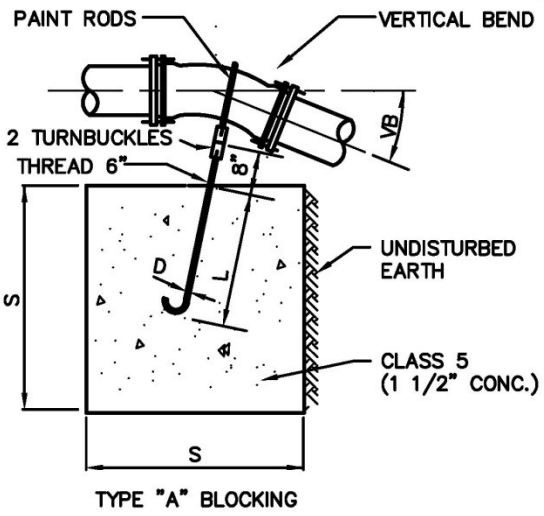
TYPE "A" BLOCKING
FOR 11 1/4°–22 1/2°–30° VERTICAL BENDS

PIPE SIZE NOMINAL DIAMETER– INCHES	TEST PRESSURE PSI	VB VERTICAL BEND DEGREES	No. OF CU. FT. OF CONC. BLOCKING	S SIDE OF CUBE LIN. FT.	D DIAM. OF RODS (2) INCHES	L DEPTH OF RODS IN CONCRETE LIN. FT.
4"	300	11 1/4	8	2	5/8"	1.5
		22 1/2	11	2.2		2.0
		30	17	2.6		
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
		30	41	3.5		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
		30	70	4.1	3/4"	2.5
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5	7/8"	3.0
		30	132	5.1		
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7	1 1/8"	4.0
		30	275	6.5	1 1/4"	
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1	1 1/4"	4.0
		30	330	6.9	1 3/8"	4.5
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8	1 3/8"	4.5
		30	480	7.9	1 7/8"	5.5

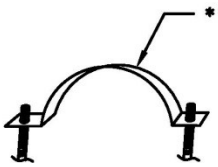
TYPE "B" BLOCKING
FOR – 45° VERTICAL BENDS

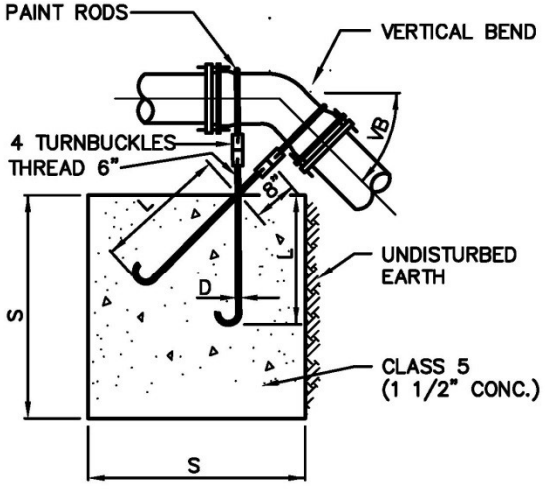
		VB		S	D	L
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5

* PIPE CLAMP, WASHERS AND NUTS MAY BE SUBSTITUTED FOR TURN BUCKLES. ALL OTHER SPECIFICATIONS THE SAME.



TYPE "A" BLOCKING





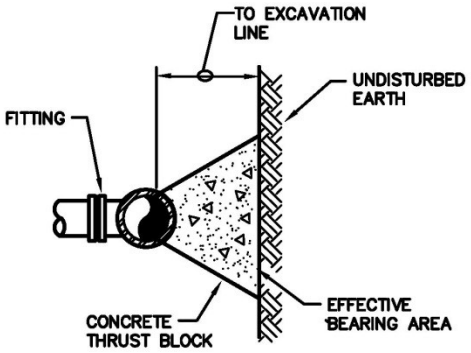
TYPE "B" BLOCKING

VERTICAL ANCHOR BLOCK

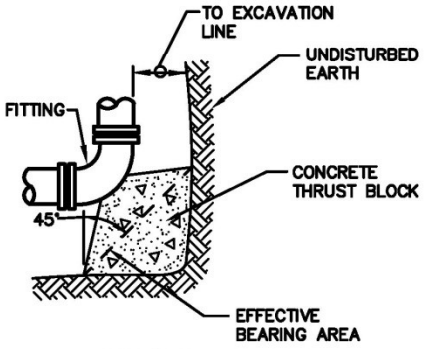
CITY OF WHITE SALMON
STANDARD DETAILS

7/18

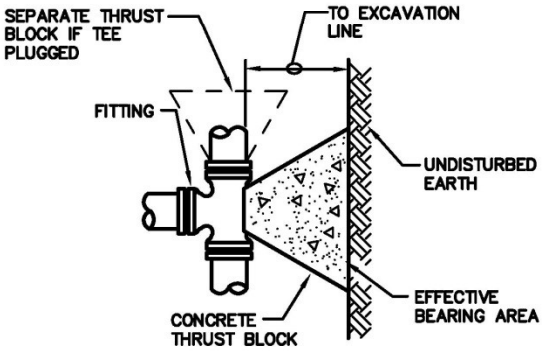
W–D13



TYPICAL SECTION



90°EL PLAN



TEE PLAN

EFFECTIVE BEARING AREA REQUIRED

PIPE SIZE	90° EL	45° EL	22 1/2° EL	11 1/4° EL	TEE
8"	7 SQ. FT.	4 SQ. FT.	2 SQ. FT.	2 SQ. FT.	5 SQ. FT.
12"	16 SQ. FT.	9 SQ. FT.	4 SQ. FT.	3 SQ. FT.	11 SQ. FT.
16"	28 SQ. FT.	15 SQ. FT.	8 SQ. FT.	5 SQ. FT.	20 SQ. FT.

TYPICAL FOR SANDY SOIL WITH 2,000 P.S.F. BEARING STRENGTH & 200 P.S.I. PRESSURE. IF PRESSURE IS GREATER OR SOIL BEARING IS LESS, THE THRUST BLOCK SIZE SHALL BE INCREASED.

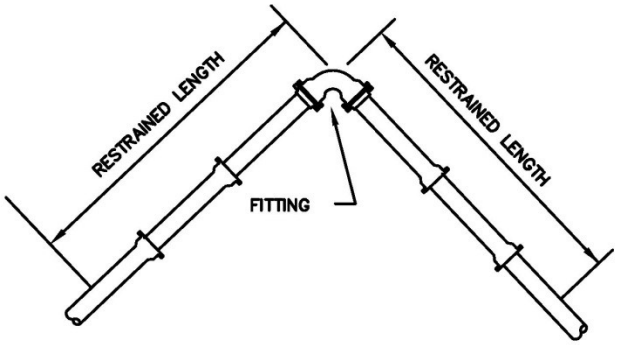
NOTES:

1. BLOCKING SHALL BE TO SOLID BEARING SURFACE.
2. ALL FITTINGS SHALL BE COVERED WITH 4 MIL VISQUEEN BEFORE CONCRETE IS POURED. BOLTS SHALL NOT BE COVERED W/CONCRETE.
3. CONCRETE BLOCKING SHALL BE 2000 PSI MINIMUM CONCRETE POURED IN PLACE. ALL BLOCKS ON TEES SHALL BE SEPARATED FOR DIRECTION OF THRUST.
4. THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE SIZE OF ALL THRUST BLOCKS BASED ON EXISTING AND LOCAL CONDITIONS.

THRUST BLOCKING

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W–D14



PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE OR DEAD END CAP
	RESTRAINED LENGTH IN FEET				
4"	32	14	7	3	26
6"	44	19	9	5	32
8"	58	24	12	6	43
10"	70	29	14	7	54
12"	82	34	16	8	66
16"	106	44	21	11	88
18"	116	48	23	12	100

NOTES:

① RESTRAINED LENGTHS SHOWN ARE MINIMUM AND FOR LINEAL FEET REQUIRED ON EACH SIDE OF FITTING INDICATED.

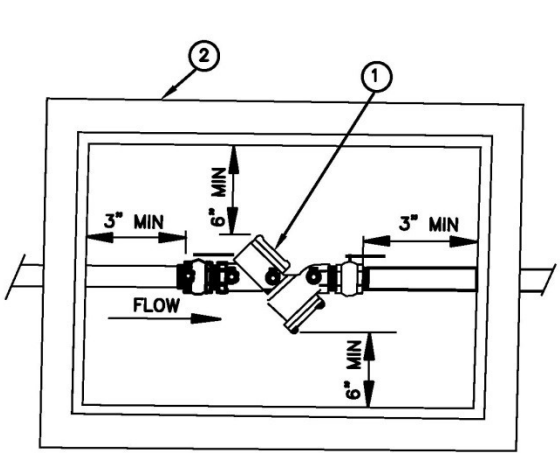
② FOOTAGES ARE BASED ON 200 PSI PRESSURE AND 42 INCHES COVER. IF PRESSURE IS GREATER OR COVER IS LESS, THE RESTRAINED LENGTH SHALL BE INCREASED.

③ THIS TABLE REPRESENTS THE "MINIMUM" CONSTRUCTION STANDARDS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE LENGTH OF ALL RESTRAINED JOINT BASED ON EXISTING AND LOCAL CONDITIONS.

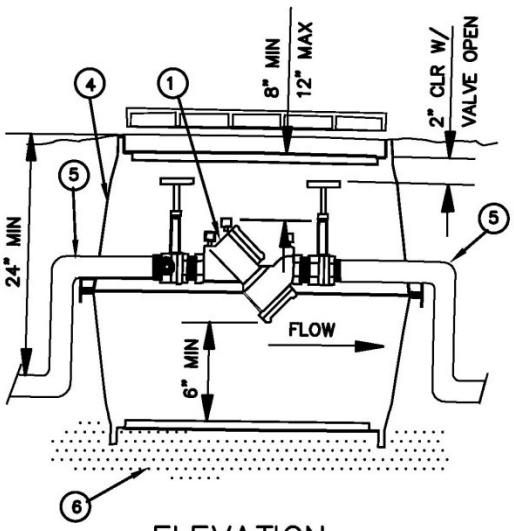
THRUST RESTRAINT FOR DUCTILE IRON PIPE

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W–D15



PLAN



ELEVATION

LEGEND

1. STATE APPROVED DOUBLE CHECK VALVE ASSEMBLY
2. IN NON-TRAFFIC AREAS USE:
   PRECAST CONCRETE VAULT (UTILITY VAULT CO 233-LA, OR APPROVED EQUAL) OR METER BOX (FOGTITE #2 OR BROOKS #65)
   IN TRAFFIC AREAS:
   A TRAFFIC LOADED BOX MUST BE USED AND LOCATION APPROVED BY THE CITY PRIOR TO INSTALLATION.
3. ALL ASSEMBLIES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH WASHINGTON STATE DEPARTMENT OF HEALTH REQUIREMENTS.
4. THERE MUST BE A 4" MIN LAYER OF FREE DRAINING GRAVEL AT THE BOTTOM OF BOX.
5. ANGLES MAY BE IN OR OUT OF BOX SO LONG AS SUFFICIENT ROOM IS ALLOWED AT EACH END FOR VALVE OPERATOR AND DCVA REPAIR OR MAINTENANCE.
6. PROVIDE FREE DRAINING SOIL.

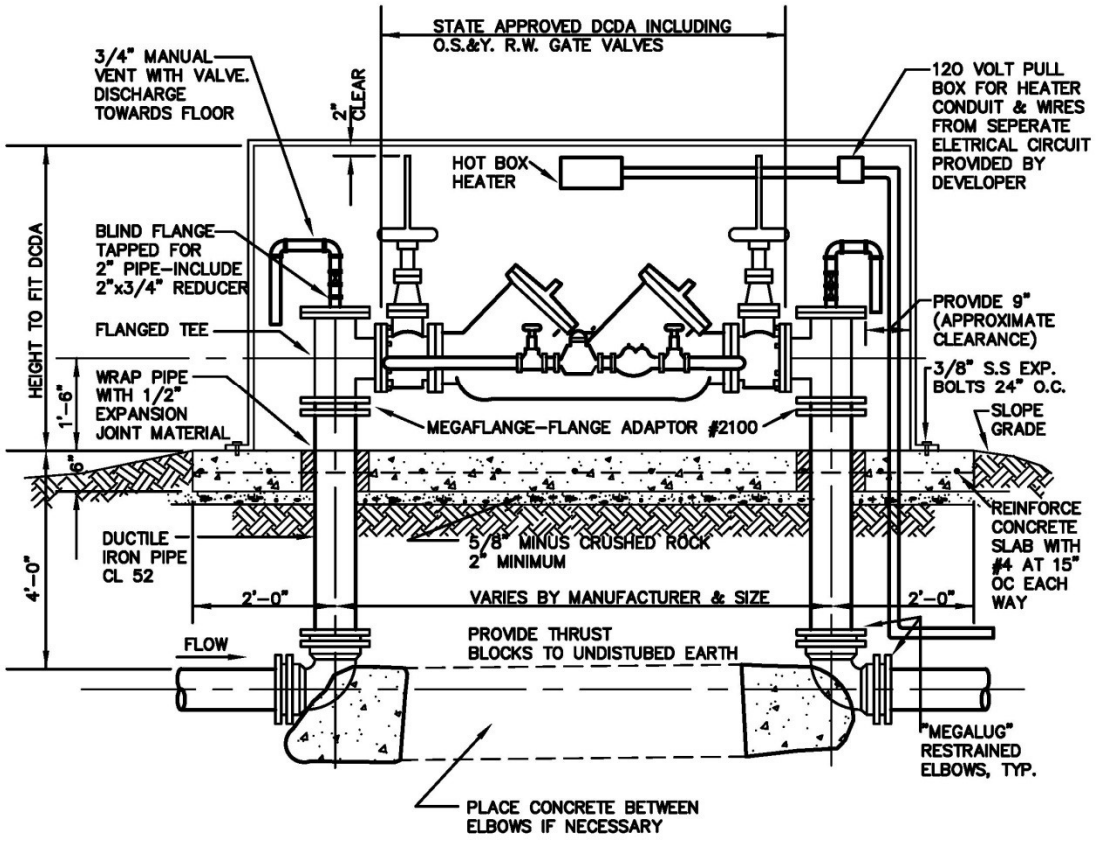
NOTES

1. ALL TEST COCKS MUST HAVE BRASS CAPS.
2. TEST COCKS MUST FACE UP OR SIDEWAYS WHICH EVER IS MORE ACCESSIBLE

DOUBLE CHECK VALVE ASSEMBLY
FOR 2" & SMALLER SERVICE

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W-D16



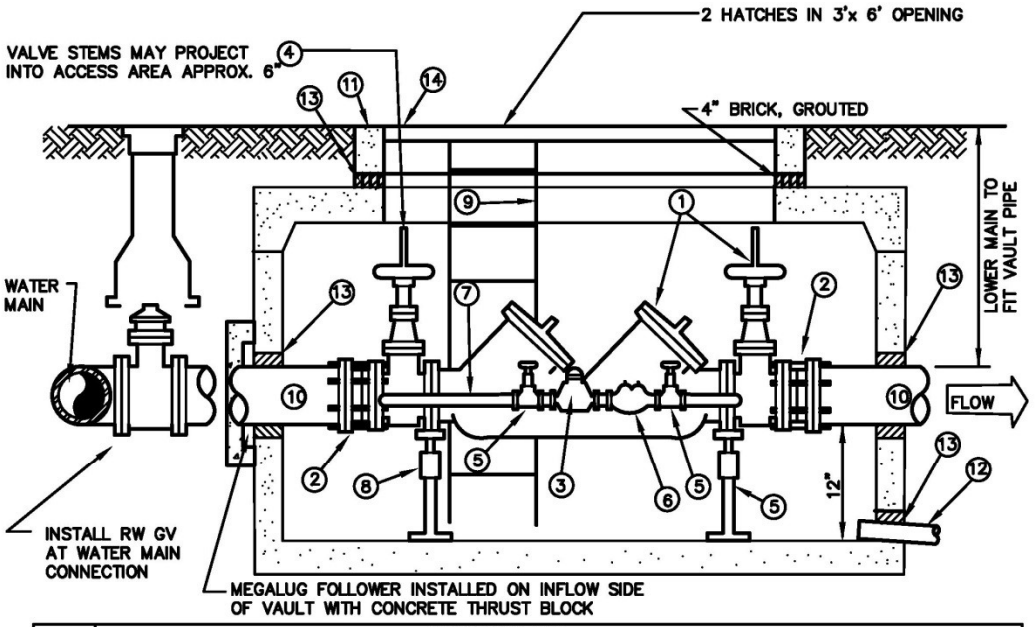
NOTES:

1. INSTALLATION OF HOT BOX SUBJECT TO APPROVAL OF CITY AS AN ALTERNATE TO VAULTS.
2. ALUMINUM "HOT BOX" MODELS 4 THROUGH 10 FOR RESPECTIVE SIZE DCDA SHALL BE MODIFIED TO FIT ABOVE HEIGHT REQUIREMENTS. VALVE STEM SHALL NOT BE ALLOWED TO EXTEND OUTSIDE OF BOX.
3. HEATERS SHALL BE 2,000 WATT FOR 6" AND 8" SIZE: 3,000 WATT FOR 10" OR LARGER.
4. PROVIDE SPECIAL LOCK FOR 2 PADLOCKS.
5. CONCRETE TO BE 2500 PSI MIX WITH AIR ENTRAINMENT.

DOUBLE CHECK DETECTOR HOT BOX ENCLOSURE

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W-D17



NO.	DESCRIPTION
1	STATE APPROVED DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) BACKFLOW PREVENTION ASSEMBLY WITH O.S.&Y. R.W. GATE VALVE
2	ROMAC STYLE 'FCA 501' FLANGED COUPLING ADAPTER
3	5/8" x 3/4" MASTER METER W/ALLEGRO RADIO READ REGISTER: 6 WHEEL READING IN GALLONS.
4	LOCATE CENTER OF VALVE 15" FROM CENTER OF VAULT TO ALLOW STEMS TO EXTEND INTO ACCESS OPENING WHEN APPLICABLE
5	3/4" SHUTOFF VALVE; BRASS GATE VALVE
6	STATE APPROVED 3/4" DOUBLE CHECK VALVE ASSEMBLY (DCVA)
7	BRASS OR TYPE K COPPER, DETECTOR CHECK PIPING (BY PASS LINE)
8	2 EA. GALVANIZED ADJUSTABLE STANCHIONS (LOCATE AT ENDS OF DOUBLE CHECK ASSEMBLY)
9	GALVANIZED STEEL LADDER, LOCATE AS DIRECTED BY CITY, SECURE TO VAULT.
10	PIPE SPOOL, CL. 52 D.I., PLAIN END
11	"UTILITY VAULT" OR APPROVED EQUAL WITH 4" BRICK AND ADJUSTABLE COVER; 2 ACCESS HATCHES: EXCEPT 3 HATCHES FOR 10" DCDA. LW PRODUCTS OR EQUAL, H-20 LOADING 4" DCDA, USE 575 LA + 57 AT (4'-2" x 6'-6" x 4'-0" INSIDE) 6" DCDA, 4484 LA + 57 AT (4'-4" x 8'-4" x 6'-2" INSIDE) 6" DCDA, 5106 LA + 57 AT (5'-0" x 10'-6" x 4'-4" INSIDE) 8" DCDA, 5106 LA + 57 AT (5'-0" x 10'-6" x 6'-2" OR 4'-4" INSIDE) 10" DCDA, 5106 LA + 5106 AT (3 HATCH) (5'-0" x 10'-6" x 6'-2" OR 4'-4")
12	6" PVC DRAIN, DISCHARGE TO DAYLIGHT OR TO CATCH BASIN. MINIMUM SLOPE 1% UNLESS OTHERWISE APPROVED. ADD SCREENS AT BOTH ENDS.
13	WATERTIGHT GROUT, INLET AND OUTLET PIPE, DRAIN PIPE AND BRICK ACCESS OPENING
14	SIGN READING "DANGER-PERMIT REQUIRED-CONFINED SPACE, DO NOT ENTER"

NOTE:

AFTER PRESSURE TEST AND PURITY SAMPLES ARE RECIEVED, A CERTIFIED BACKFLOW ASSEMBLY TESTER SHALL SUPPLY CITY WITH A WRITTEN TEST REPORT ON EACH BACKFLOW ASSEMBLY.

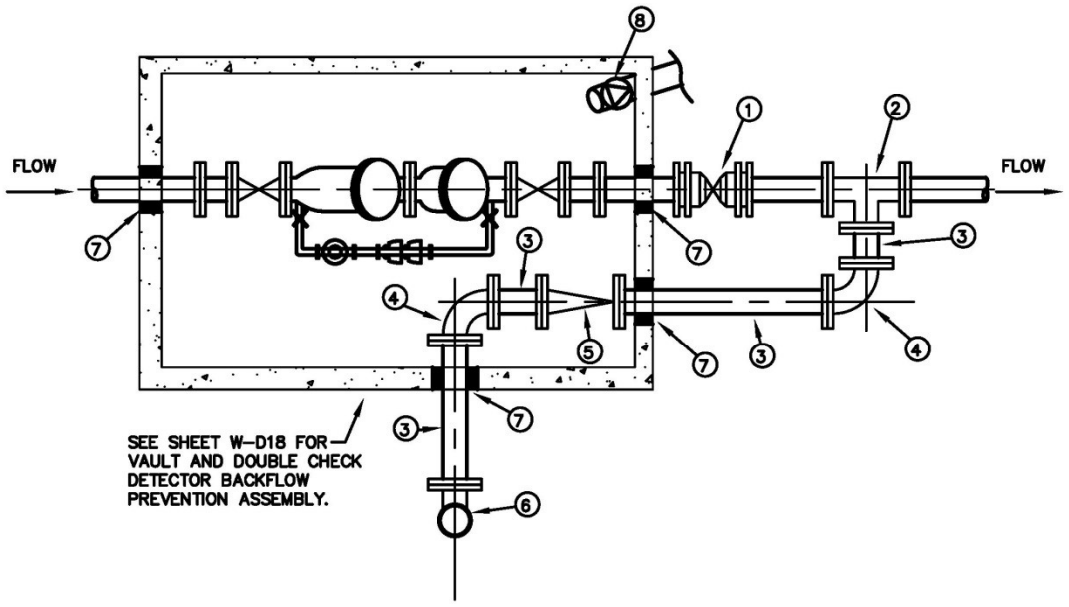
7/18

W-D18

DOUBLE CHECK DETECTOR BACKFLOW PREVENTION ASSY.

CITY OF WHITE SALMON

STANDARD DETAILS



NO.	DESCRIPTION
1	POST INDICATOR VALVE, MJ WITH MEGALUGS
2	MAIN LINE SIZE X 4" TEE, MJ WITH MEGALUGS
3	4" DUCTILE IRON PIPE, CLASS 52*
4	4" x 90° BENDS, MJ WITH MEGALUGS
5	4" FLAPPER CHECK VALVE WITH BALL CHECK DRAIN VALVE, MJ WITH MEGALUGS
6	FIRE DEPARTMENT CONNECTION 5" STORZ ADAPTER. CONNECTION TO COMPLY WITH FIRE DEPARTMENT REQUIREMENTS. ALL ABOVE GROUND PIPING TO BE PAINTED SAME COLOR RED AS P.I.V.
7	WATERTIGHT GROUT
8	6" PVC DRAIN TO DAYLIGHT OR CB, MINIMUM SLOPE 1%. SCREEN AT BOTH ENDS W/BACKWATER VALVE IN VAULT

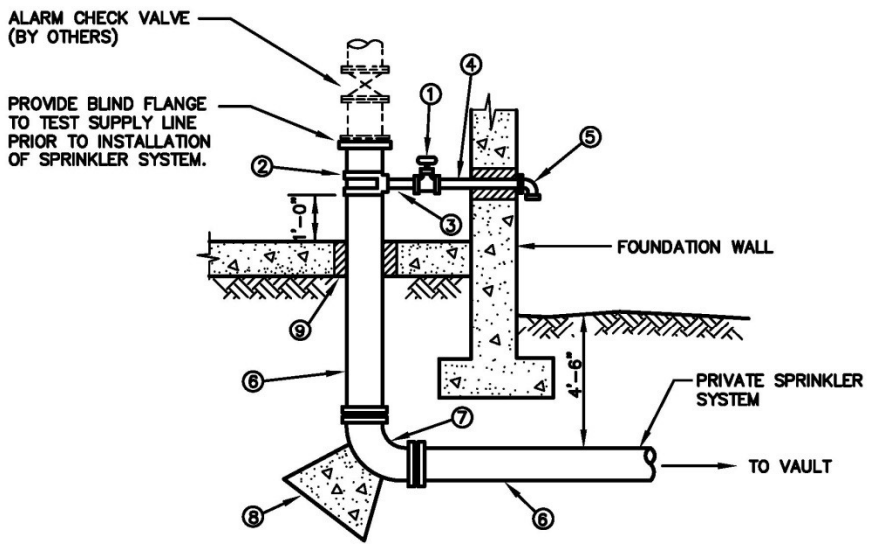
* 4" DIAMETER AND SMALLER DUCTILE IRON PIPE SHALL BE CLASS 53 IF USED IN A THREADED APPLICATION.

FIRE LINE CONNECTION

CITY OF WHITE SALMON
STANDARD DETAILS

7/18

W-D19



No.	DESCRIPTION
1	2" RWGV OR BRONZE BALL VALVE
2	ROMAC STYLE 202S STAINLESS STEEL DOUBLE STRAP SADDLE (OR APPROVED EQUAL)
3	2" BRASS NIPPLE
4	2" GALVANIZED NIPPLE
5	2" GALVANIZED 90° EL
6	D.I. CL. 52 SUPPLY MAIN (SIZE AS DETERMINED BY FIRE FLOW REQUIREMENTS).
7	90° BEND (MJ x MJ) WITH MEGALUG
8	CONCRETE THRUST BLOCK (SIZE TO BE APPROVED BY CITY)
9	1/2" EXPANSION JOINT

NOTE

AFTER SYSTEM IS PRESSURE TESTED, PURITY SAMPLES SHALL BE TAKEN AT ALL RISERS IN SYSTEM.

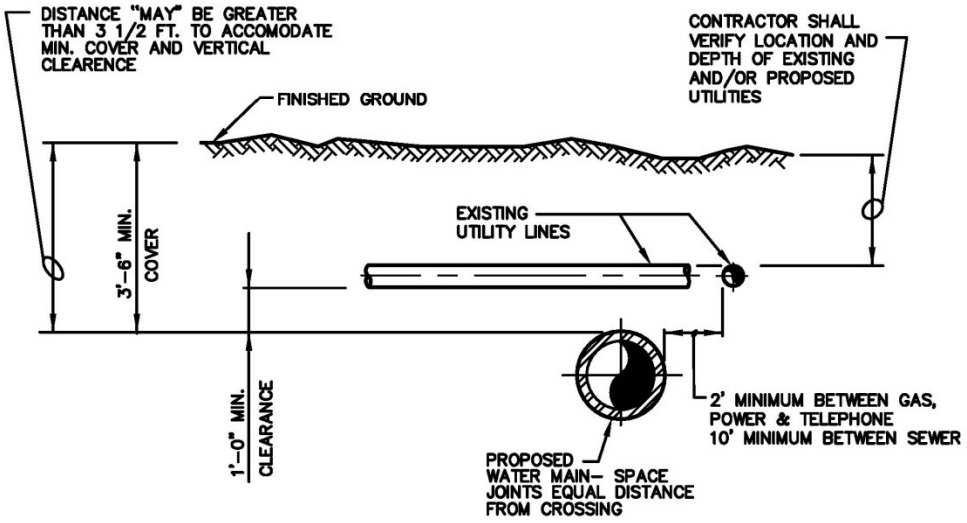
4" DIAMETER AND SMALLER DUCTILE IRON PIPE SHALL BE CLASS 53 IF USED IN A THREADED APPLICATION.

FIRE LINE RISER DETAIL

CITY OF WHITE SALMON
STANDARD DETAILS

7/18

W–D20



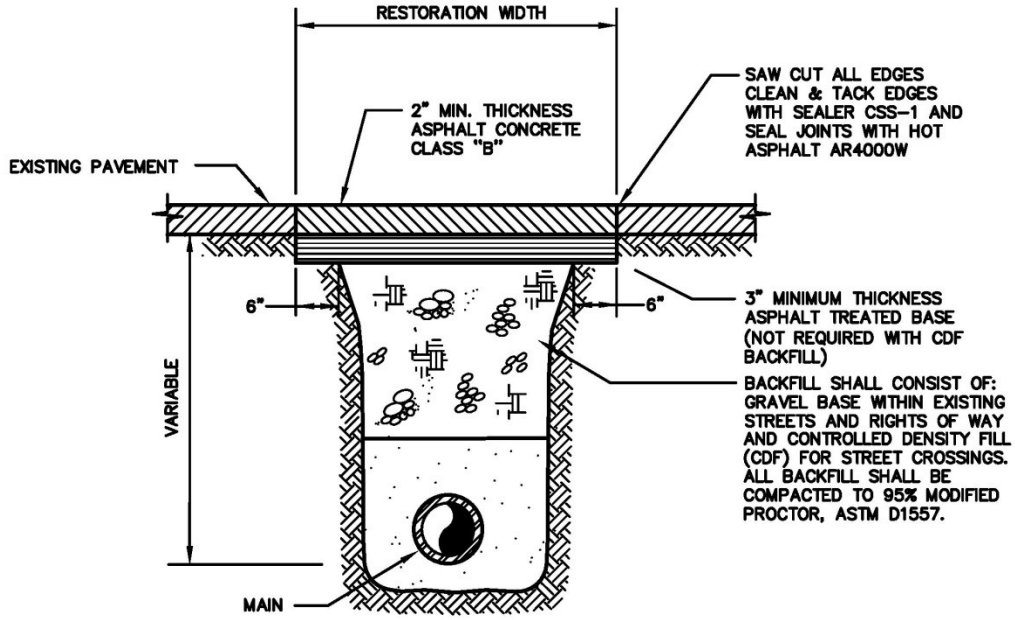
NOTES:
MINIMUM COVER SHOWN IS FOR 8" DIMATER PIPE.
SEE W-D1 FOR MINIMUM COVER FOR ALL PIPES.

TYPICAL UTILITY CROSSING

CITY OF WHITE SALMON
STANDARD DETAILS

7/18

W-D21



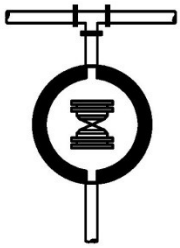
NOTES:

1. ALL ASPHALT STREETS AND DRIVEWAYS SHALL BE TEMPORARILY REPAIRED WITH COLD MIX, EXCEPT CROSSINGS WITH CDF SHALL BE COVERED WITH STEEL PLATES UNTIL THE CDF HAS CURRED TO ALLOW FOR PLACEMENT OF THE ASPHALT.
2. PATCH SHALL BE MACHINE ROLLED FLUSH WITH EXISTING PAVEMENT AND SHALL BE PLACED PER SEC. 5-04 OF THE WA. STATE D.O.T. SPECIFICATIONS.

ASPHALT PAVEMENT REPAIR

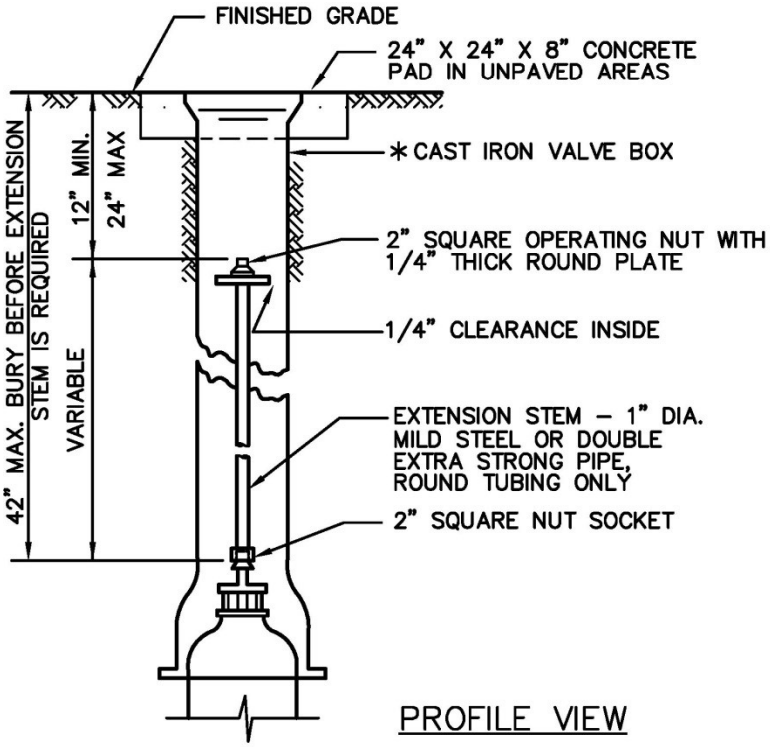
CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W-D22



ALIGN "EARS" ON VALVE BOX TOP WITH DIRECTION OF PIPE BRANCH THE VALVE OPENS AND CLOSES.

PLAN VIEW



PROFILE VIEW

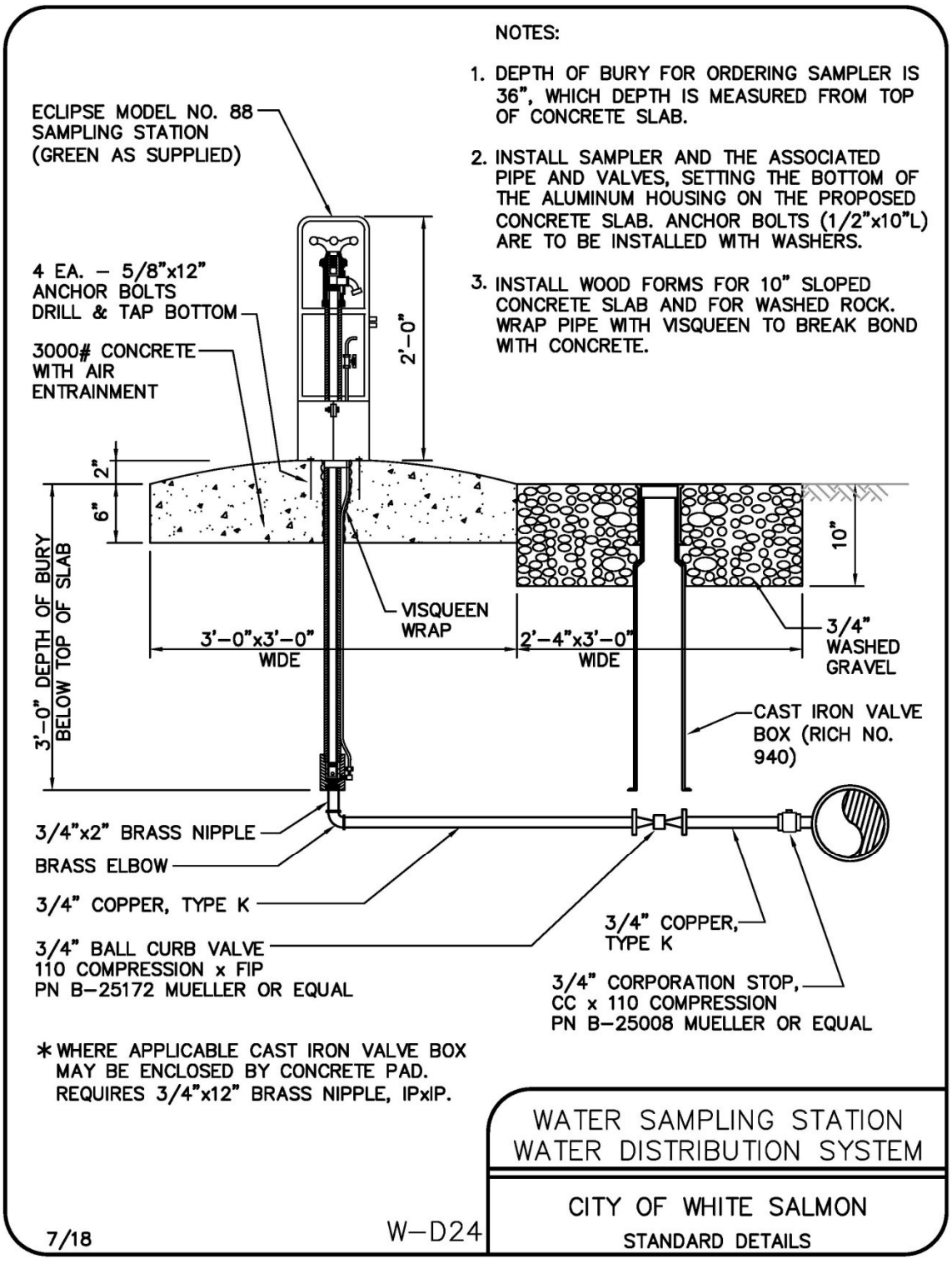
*CAST IRON VALVE BOX EXTENSION SHALL UTILIZE 5" CAST IRON "SOIL PIPE". BELL END TO BE PLACED OVER TOP OF VALVE BOX BOTTOM.

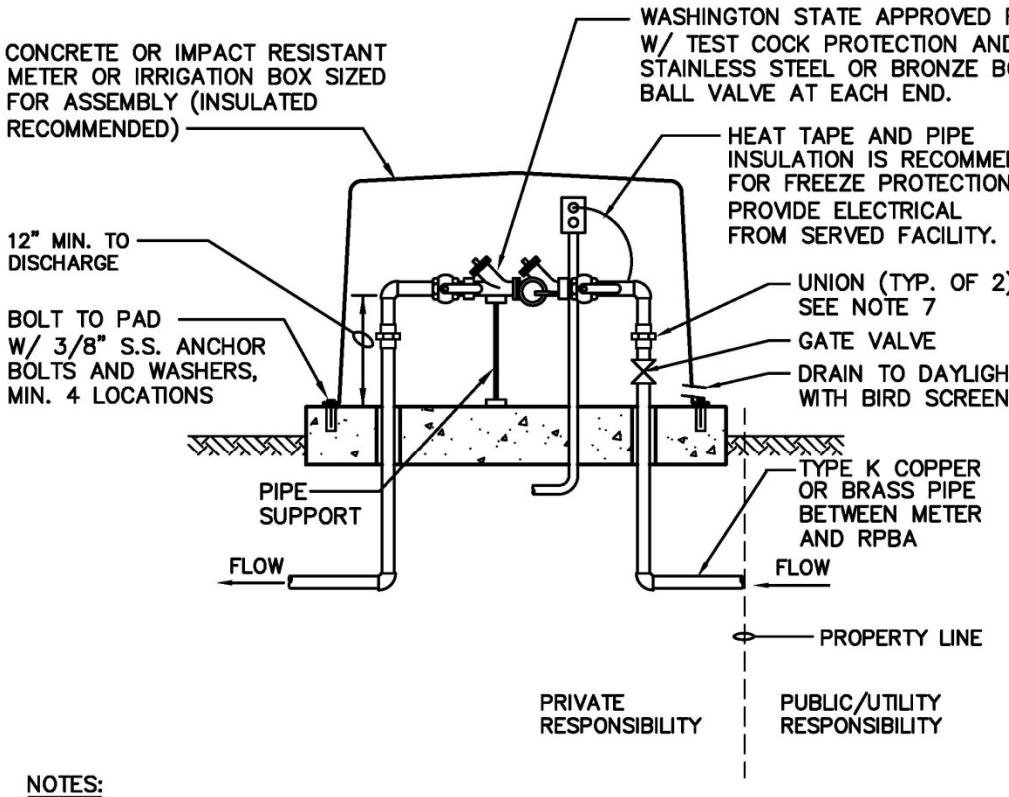
VALVE STEM EXTENSION

CITY OF WHITE SALMON
STANDARD DETAILS

7/18

W–D23


NOTES:
1. DEPTH OF BURY FOR ORDERING SAMPLER IS 36", WHICH DEPTH IS MEASURED FROM TOP OF CONCRETE SLAB.
2. INSTALL SAMPLER AND THE ASSOCIATED PIPE AND VALVES, SETTING THE BOTTOM OF THE ALUMINUM HOUSING ON THE PROPOSED CONCRETE SLAB. ANCHOR BOLTS (1/2"x10"L) ARE TO BE INSTALLED WITH WASHERS.
3. INSTALL WOOD FORMS FOR 10" SLOPED CONCRETE SLAB AND FOR WASHED ROCK. WRAP PIPE WITH VISQUEEN TO BREAK BOND WITH CONCRETE.
ECLIPSE MODEL NO. 88 SAMPLING STATION (GREEN AS SUPPLIED)
4 EA. – 5/8"x12" ANCHOR BOLTS DRILL & TAP BOTTOM
3000# CONCRETE WITH AIR ENTRAINMENT
2'–0"
2"
6"
3'–0" DEPTH OF BURY BELOW TOP OF SLAB
VISQUEEN WRAP
3'–0"x3'–0" WIDE
2'–4"x3'–0" WIDE
10"
3/4" WASHED GRAVEL
CAST IRON VALVE BOX (RICH NO. 940)
3/4"x2" BRASS NIPPLE
BRASS ELBOW
3/4" COPPER, TYPE K
3/4" BALL CURB VALVE 110 COMPRESSION x FIP PN B–25172 MUELLER OR EQUAL
3/4" COPPER, TYPE K
3/4" CORPORATION STOP, CC x 110 COMPRESSION PN B–25008 MUELLER OR EQUAL
*WHERE APPLICABLE CAST IRON VALVE BOX MAY BE ENCLOSED BY CONCRETE PAD. REQUIRES 3/4"x12" BRASS NIPPLE, IPxIP.
WATER SAMPLING STATION
WATER DISTRIBUTION SYSTEM
CITY OF WHITE SALMON
STANDARD DETAILS
7/18
W–D24



NOTES:

1. BACKFLOW ASSEMBLY SHALL BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH CURRENT APPROVED LIST.
2. CONCRETE TO BE 2500 PSI MIX WITH AIR ENTRAINMENT.
3. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, CITY AND MANUFACTURER STANDARDS.
4. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE CITY AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
5. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
6. PRESSURE TEST AND DISINFECT PER A.W.W.A. STANDARDS.
7. DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.
8. RPBA BOX SHALL BE LOCATED IMMEDIATELY DOWNSTREAM OF WATER SERVICE BOX PRIOR TO ANY BRANCH CONNECTIONS WITH NO MORE THAN 2' BETWEEN BOXES.

REDUCED PRESSURE BACKFLOW ASSEMBLY – 3/4" TO 2"

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 W–D25

PART 3

SEWER MAINS

S-1 SEWER MAINS, LATERALS AND FORCE MAINS

Sewer pipe shall be polyvinyl chloride (PVC) or polyethylene or epoxy lined ductile iron (DI) with restrained joints for all sizes unless specifically noted otherwise.

Sewer mains to be installed shall be of material noted below:

Gravity Sewer and Laterals:

PVC Pipe:	5' - 18' Cover
DI Pipe:	3' - 5' Cover
	18' and Over
	Slopes of 18% or greater
Force Main:	DI Pipe

All types of pipe shall be handled in a manner that will prevent damage to the pipe, pipe lining or coating. Pipe and fittings shall be loaded and unloaded using hoists and slings in a manner to avoid shock or damage, and under no circumstances shall they be dropped, skidded, or rolled against other pipe. Damaged pipe will be rejected, and the Developer shall immediately place all damaged pipe apart from the undamaged and shall remove the damaged pipe from the site within 24 hours.

Methods of handling shall be corrected by the contractor if the City determines that these methods are damaging to the pipe.

Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations, and any pipe or fitting that has been installed with dirt or foreign material in it shall be removed, cleaned, and relayed. A clean whiskbroom shall be used for this purpose and for brushing to remove foreign matter prior to joining of pipe ends. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or by other means approved by the City to ensure cleanliness inside the pipe.

Pipe shall be stacked in such a manner as to prevent damage to the pipe, to prevent dirt and debris from entering the pipe, and to prevent any movement of the pipe. The bottom tiers of the stack shall be kept off the ground on timbers, rails or other similar supports. Pipe on succeeding tiers shall be alternated by bell and plain end. Timbers 4 inch by 4

inch in size shall be placed between tiers and chocks shall be placed at each end to prevent movement. For safety each size of pipe shall be stacked separately.

Immediately upon beginning pipe installation, the Contractor shall place and secure a watertight plug in the sewer manhole. The plug shall remain in place throughout the project until such time as the project is accepted by the City. Failure to place the plug or removal of a plug prior to approval shall be grounds for City issued penalties.

A. Ductile Iron Pipe and Fittings

The ductile iron pipe shall conform to AWWA C151 Standards, except the minimum nominal thickness shall be as follows:

6" - 0.25" (Class 52)
8" - 0.27" (Class 52)
10" - 0.29" (Class 52)
12" - 0.31" (Class 52)

Grade of iron shall be 60-42-10. The pipe shall be polyethylene or epoxy lined to a nominal thickness of 40 mils. Minimum lining thickness shall be 30 mils. The exterior shall be coated with an asphaltic coating. Products meeting the standard are US pipe "Polylined," "Protecto 401" and American Pipe "Polyband" or approved equal.

Each length shall be plainly marked with the manufacturer's identification, year cast, thickness, class of pipe and weight. The pipe shall be furnished with mechanical joint or push-on joint, conforming to AWWA C111 Standards, except where otherwise noted calling for flanged joints.

Restrained joint pipe, where shown on the Plans, shall be push-on joint pipe with "Field Lok" gaskets or TR FLEX as furnished by US Pipe, or approved equal.

The pipe manufacturer shall certify in writing that the inspection and all tests of the specified standards for both pipe and gaskets being supplied for this project have been made and that the results thereof comply with the requirements of the Standard.

Joints shall be "made-up" in accordance with the manufacturer's recommendations. Standard joint material, including rubber ring gaskets shall be furnished with the pipe. Materials shall be suitable for the specified pipe sizes and pressures. The pipe joint utilized shall be the patented "Tyton" joint.

All fittings shall be short-bodied, ductile iron complying with applicable AWWA C110 or C153 Standards. All fittings shall be polyethylene or epoxy lined and either mechanical joint or flanged, as indicated on the Plans.

Fittings in sections shown on the Plans requiring restrained joints shall be mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG, Romac Industries, Inc., Grip Ring Pipe Restrainer or approved equal. Stargrip Series 3000 mechanical joint restraint devices are not accepted or approved as equal.

Fittings shall be adequately "blocked" with poured-in-place concrete, within wooden forms shaped to establish a firm minimum bearing area, against an undisturbed earth wall as shown on the Standard Details. Timber blocking will not be permitted. The concrete thrust blocks must be in place at least 24 hours before beginning the pressure test, to allow the concrete to "set." The strength of the concrete shall be 2,000 psi minimum.

All fittings requiring a concrete block shall first be covered with 4-mil Visqueen plastic sheets, before concrete is poured. The concrete shall not cover joints, bolt heads or nuts.

All bolts shall be coated with Armite Anti-Seize Compound No. 609, or equal, prior to installation.

All connections to ductile or cast iron pipe shall be with ductile iron mechanical joint sleeves except as shown on the Plans for mechanical joint tees, valves, etc.

B. PVC Pipe and Fittings

The PVC pipe shall be a minimum Class S.D.R. 35 and be manufactured in accordance with ASTM D3034. The pipe and fittings shall be furnished with bells and spigots, which are integral with the pipe wall. Pipe joints shall use flexible elastomeric gaskets conforming to ASTM D3212. Nominal laying lengths shall be 13 feet.

Tees for side sewer laterals shall be 6-inch-diameter fabricated tees. No field cut-in tees will be allowed without approval of the City.

If approved by the City, the connection shall be made by machine-made tap and Romac Style Sewer "CB" Saddle or Inserta Tee, available from Fowler Manufacturing Company or equal.

The gravity sewer pipe, unless otherwise approved by the City shall be laid upgrade from point of connection on the existing sewer or from a designated starting point. The sewer pipe shall be installed with the bell end forward or upgrade. When pipe laying is not in progress, the forward end of the pipe shall be kept tightly closed with an approved temporary plug. Wherever movable shoring (steel box) is used in the ditch, pipe shall be restrained by use of a winch mounted in the downstream manhole and a line of sufficient strength threaded through the pipe and set tight before each move. Any indication that joints are not being held shall be sufficient reason for the City to require restraints, whether or not movable shoring is being used.

All gravity sewer pipe shall be laid in straight lines and at uniform rate of grade between manholes. Variance from established line and grade shall not be greater than 1/2 inch, provided that such variation does not result in a level or reverse sloping 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 1/64 inch per inch of pipe diameter, or a total of 1/2 inch maximum. Any corrections required in line and grade shall be reviewed with the City and the repairs shall be made at the expense of the Developer.
Pipe handling after the gasket has been affixed shall be carefully controlled to avoid disturbing the gasket and knocking it out of position, or fouling the gasket with dirt or other foreign material. Any gaskets so disturbed shall be removed, cleaned, re-lubricated if required, and replaced before the rejoining is attempted.

Care shall be taken to properly align the pipe before joints are forced entirely home. During insertion of the tongue or spigot, the pipe shall be partially supported by hand, sling or crane to minimize unequal lateral pressure on the gasket and thereby maintain concentricity until the gasket is properly positioned. Since most flexible gasketed joints tend to creep apart when the end pipe is deflected and straightened, such movement shall be held to a minimum once the joint is home.

Sufficient pressure shall be applied in making the joint to assure that it is home, as described in the installation instructions provided by the pipe manufacturer. Sufficient restraint shall be applied to the line to assure that joints once home are held so, until fill material under and alongside the pipe has been sufficiently compacted. At the end of the workday, the last pipe laid shall be blocked in an effective way to prevent creep during “down time.”

All gravity sewer pipe shall be bedded with pea gravel. The pipe shall be bedded from a depth of 4 inches below the pipe to 12 inches above the pipe. The bedding material shall extend across the full width of the trench and shall be compacted under the haunches of the pipe.

Special concrete bedding when required to provide additional support for the pipe shall consist of a pipe cradle constructed of Portland cement concrete containing not less than four sacks of cement per cubic yard. Sand, gravel and water proportions are subject to approval by the City. Maximum aggregate size shall be one and 1-1/2 inches. Maximum slump shall be 4 inches. The bottom of the trench shall be fully compacted before the placement of pipe cradle. The Developer shall protect pipe against flotation and disturbing the horizontal alignment of the pipe during the pouring of the concrete.

Clay or bentonite dams shall be installed across the trench, keyed into native undisturbed soil and to the full depth of the granular material in all areas of steep slopes, stream crossings and within wetlands to prevent migration of water along the pipeline. The City shall determine where trench dams are required.

C. High Density Polyethylene Pipe (HDPE)

HDPE pipe may be used, under special circumstances only, with approval of the City. Approval shall be subject to a case-by-case review of the proposed application and of the proposed pipe and installation specifications. Design calculations shall be submitted to support the proposed SDR-rating, with respect to surge pressure and buckling, for City review and approval.

HDPE pipe shall conform to AWWA C-906. The HDPE pipe shall be butt-fused welded pipe (Driscopipe Prisma 4200 or equivalent) and shall be high-density, PE 3408 pipe. The material shall have a long term hydrostatic strength of 1,600 psi per ASTM D2837.

The pipe shall be made from polyethylene resin compound. Type III, Category 5, Class C, Grade P34 per ASTM D-1248. The minimum cell classification shall be PE334434C for PE 3408 materials per ASTM D-3350. The manufacturer shall provide the proper certification to ensure the materials comply with the specifications requirements.

The material shall contain a sufficient UV stabilization for 24 month of outdoor storage.

The manufacturer shall furnish an affidavit that all materials delivered comply with the requirements of the specifications together with copies of the test results (nominal values).

The manufacturer shall furnish a certification that Compressed Ring Test (ASTM F-1248) has been utilized to test for environmental stress crack resistance and results equal or exceed F◦>5,000 hours.

The pipe shall be homogenous throughout and uniform in density, color and other properties.

Pipe markings shall include name or trademark of pipe fabricator, pipe outside diameter, standard dimension ratio (SDR), polyethylene cell classification per ASTM D-3350, production code from manufacturing location, name of manufacturer, and date of production.

Pipe and polyethylene fittings shall be produced by the same manufacturer from identical material meeting the requirements of this specification. Polyethylene fittings may be molded, or fabricated by heat fusion joining polyethylene components prepared from pipe, molded fittings, or polyethylene sheet or block, except fittings 8-inches nominal diameter and smaller shall be molded meeting the requirements of ASTM D-3261. Fittings fabricated from pipe shall be manufactured from pipe stock with a wall thickness not less than 25 percent greater than that of the pipe to which the fitting is to be jointed. The wall thickness of an outlet may be the same as the wall thickness of the pipe to which the

outlet is to be joined. Flange fittings to ductile iron pipe shall comply with ANSI 150 and shall be designed and manufactured at not less than the design pressure of the system.

With the City's prior approval, electrofusion couplings may be used to facilitate pipe installation in the vicinity of existing utilities. Electrofusion couplings shall meet the standard of AWWA C906.

Thermal stability of resin:	ASTM D-3350 (220 degrees C)(4)
Ring-tensile strength test:	ASTM D-2290 92,900 psi)(1)
Elongation-at-break test:	ASTM D-638 (750%)(4)
Carbon black content:	ASTM D-4218 (2% min.; 3% max.(2)
Melt index:	ASTM D-1238 (0.1 gm/10 min.)(2)
Density:	ASTM D-1505 (0.955 gm/cm^3)(2)
Toe-in:	ASTM D-2122 (<1.5% smaller than average O.D., 12" from end)(3)
Environmental stress crack resistance:	ASTM D-1693 (F°>192 hours min.)(4)
Frequency of Tests:	(1) At least one per production run. (2) At least one per day (24 hours). (3) At least one per day (or one per each 8-hour shift). (4) At least one per resin lot.

Flanged joining of pipe shall be performed with a convoluted ductile iron backup flange conforming to the vital dimensions of ANSI 16.5. The flange shall be epoxy coated ductile iron conforming to ASTM 536, Grade 65/45/12.

Gaskets provided at all flanged joints shall be Buna "N," grade 60, or equal suitable for wastewater. Bolts and nuts for flanged joints shall be low-carbon steel conforming to ASTM A-307, 60,000 psi tensile strength, grade B. The bolts shall be evenly tightened using a crossing pattern and each flanged joint shall be checked and retightened after 1 hour or more has passed.

Flexible couplings used for connections of high density polyethylene to ductile iron pipe shall include an adaptor ring. Adaptor ring shall be pre-fabricated lap joint (follower ring) per ASTM 207 Class "D" with two sets of bolt circles; One bolt circle to match the lap joint bolt pattern and the other bolt circle to match the bolt pattern of a Standard Class 125 flange. Gasket shall be made of rubber 1/8-inch full face type. Bolts shall be provided as required for the connection. Flanges shall have a fusion bonded epoxy coating.

The polyethylene (HDPE) pipe shall be handled, stored, and installed so as to avoid physical damage to the pipe including cuts or gouges to depths in excess of 10 percent of wall thickness. The damaged portions of the pipe shall be removed and the undamaged portions rejoined using the thermal butt fusion joining method unless the pipe is acceptable to the City and manufacturer.

Sections of polyethylene pipeline shall be joined into continuous lengths by the butt fusion method above ground along the trench or by flanged connections in the trench as required to avoid existing utilities. The joining method shall be performed by personnel trained to assemble the pipe and in strict accordance with the pipe manufacturer's recommendation. The pipe shall be assembled as a continuous piping system to avoid the need for thrust blocks for thrust restraint at bends or fittings for thrust restraint.

In some cases along the pipeline, the manufacturers recommend bending radius may be exceeded and may require a fabricated fitting. All fabricated fittings shall be fully pressure rated and configured to conform to the total deflection angle noted on the Plans. As an alternative, fully pressure rated mitered fittings are acceptable.
Thermal butt fusion joining of the polyethylene pipe shall be performed with field proven equipment that has a centerline guidance system to hold the pipe and fittings in close alignment while the opposing butt ends are faced, cleaned, melted and fused together and then cooled, all in strict accordance with the pipe manufacturer's recommendations. Butt fusion joining shall be 100 percent efficient offering a joint weld strength equal to or greater than the tensile strength of the pipe.

Butt fusion joining of polyethylene pipe of unlike SDRs shall not be permitted unless assembled by butt fusion procedures as recommended by the manufacturer and approved by the City. Alternatively, joining of pipe with unlike SDRs shall be performed with flanged connections.

Care shall be taken to install the HDPE pipe in accordance with the pipe manufacturer's recommendations. Standard installation practice shall include techniques recommended by the manufacturer to compensate for high thermal expansion and contraction characteristics of HDPE pipe, including adequate backfill compaction, snaking the pipe in the trench, and making tie-in connections at anticipated operating temperatures.

Where an HDPE main connects to or passes through a buried structure, such as a manhole, valve vault or wet well, the connection to the structure shall be made using a ductile iron wall spool or sleeve cast or grouted into the structure wall. The force main shall transition from HDPE to ductile iron pipe outside the manhole using a flange adapter with a ductile iron backing ring, or other approved method. The transition shall occur within the greater of 1 foot or 1-1/2 pipe diameters of the structure wall. The connection shall be anchored against pull-out at the structure in accordance with the pipe manufacturer's recommendations.

D. Side Sewer Laterals

A side sewer lateral is considered to be that portion of a sewer line that will be constructed between a main sewer line and a property line or easement limit line.

All applicable specifications given herein for sewer construction shall be held to apply to side sewer laterals. The side sewer lateral shall be of the same material as the mainline, except as noted in the Standing Side Sewer Detail.

Side sewers shall be for a single service connection only and be a minimum 6-inch-diameter pipe. Side sewers shall be connected to the tee, provided in the sewer main where such is available, utilizing approved fittings or adapters. The side sewer shall rise at a maximum of 45 degrees and a minimum of 2 percent, extending from the sewer main.

The maximum bend permissible at any one fitting shall not exceed 45 degrees. Any bend, or combination of bends equaling 45 degrees shall consist of or be followed by a wye clean out.
Where there are no basements, the minimum side sewer depth shall be 6 feet below existing curb line and 5 feet below ground at the property line, except where existing improvements, proposed improvements or topography may dictate additional depth. The elevations of the side sewer connections shall be of sufficient depth to serve all existing and potential future basements.

The Developer shall provide for each 6-inch side sewer service a 12-foot-long 2 x 4 wooden post, which extends from the invert of the end of the 6-inch pipe to above the existing ground. The exposed area of the post shall be painted white and shall have stenciled thereon in 3-inch letters (black paint) “S/S” and shall also indicate the total length of the 2 x 4.

Where there are no basements, the maximum side sewer depth at the 2 x 4 shall be no greater than 8 feet unless approved by the City.

All side sewers, other than single-family, shall have a standard sewer manhole installed, 10 feet into the property for sampling purposes.

Sewer Grinder Pumps are not allowed. Where standard conforming gravity service cannot be achieved and denial of service is the only remaining option, private ownership of grinder pumps may be considered by the City. The Developer’s Engineer shall provide the City with information utilized in determining gravity service unavailability showing that all means of achieving gravity service, regardless of cost, have been reviewed and eliminated. If it is proven that gravity service is unavailable, only then will the City accept the Developers Engineer’s proposal identifying pump design and the areas to be served for City review and approval.

E. Grease Interceptors

When specified by the City, grease interceptors shall be provided for all Commercial, Industrial or School food establishments and when specified by the City (Interceptor shall be installed as close as possible to source of grease/fat). When specified by the City, a Sample Chamber shall be installed immediately downstream of the Grease Interceptor.

S-2 MANHOLES

Permanent access for City service vehicles shall be provided at all manholes. Manholes shall be of the offset type and shall be precast concrete sections with either a cast in place base, or a precast base made from minimum 3,000 psi structural concrete. Joints between precast wall sections shall be confined O-ring or as otherwise specified. All manholes over 20 feet in depth shall be a minimum of 54 inches in diameter.

For connections to existing manholes, a concrete coring machine, suitable for this type of work, shall be utilized in making the connection. The existing manhole shall be rechanneled as required. The new pipe connection shall be plugged (water tight) until the new pipe system has been installed and approved. The Developer shall be responsible for any existing defects in the existing manhole unless these defects are witnessed by the City prior to any work being performed to make the connection. The Developer shall be required to remove any and all deleterious material in the existing manhole and downstream reaches as a result of their connection.

The Developer shall excavate completely around the manhole to prevent unbalanced loading. The manhole shall be kept in operation at all times and the necessary precautions shall be taken to prevent debris or other material from entering the sewer.

A. Manhole Sections

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 be watertight. Rough, uneven surfaces will not be permitted.

B. Manhole Steps and Ladders

Manhole steps shall be polypropylene, Lane International Corp. No. P13938 or equal. Ladders shall be polypropylene Lane International Corp. or equal, and shall be compatible with the steps.

C. Grade Adjustment

Each manhole shall be provided with not less than 16 inches or more than 24 inches of grade adjustment between the top of the cone and the top of the manhole frame.

Masonry units or precast concrete adjustment rings shall be installed to adjust to final grade. The outside and inside of manhole adjusting bricks or rings and the joints of precast concrete sections shall be plastered and troweled smooth with 1/2 inch (minimum) of mortar in order to attain a watertight surface.

In unpaved areas, a 4-foot-diameter by 8-inches-thick concrete collar shall be poured around the manhole with a manhole marker post unless prior authorization has been granted by the City.

D. 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 City. The channels shall be field poured after the inlet and outlet pipes have been laid and firmly grouted into place at the proper elevation. Allowances shall be made for a 0.1-foot drop in elevation across the manhole in the direction of flow. Channel sides shall be carried up vertically from the invert to three-quarters of the diameter of the various pipes. The concrete shelf shall be warped evenly and sloped 3/8 inch per foot to drain. Rough, uneven surfaces will not be permitted. Channels shall be constructed to allow the installation and use of a mechanical plug or flow meter of the appropriate size.

E. Pipe Connections

All pipe connections to the manhole shall be with a water tight flexible rubber boot, Kor-N-Seal, or by casting or grouting a Heavy Duty sand collar, or equal into the manhole wall.

F. Drop Manholes

Drop manholes shall, in all respects, be constructed as a standard manhole with the exception of the drop connection as shown on the Standard Detail.

G. Lift Holes and Steel Loops

All lift holes shall be completely filled with expanding mortar, smoothed both inside and outside, to insure water tightness. All steel loops shall be removed, flush with the manhole wall. The stubs shall be covered with mortar and smoothed. Rough, uneven surfaces will not be permitted.

H. Frames and Covers

Frames and covers shall be ductile iron. 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 non-rocking fit in any position and interchangeability of covers.

All frames and covers shall be provided with three bolt locking lids. Rings and covers shall be positioned so one of the three locking bolts is located over the manhole steps.

Frames and covers shall be adjusted to conform to the final finished surface grade of the street or easement to the satisfaction of the City.

In easements and/or under special circumstances and at the sole discretion and approval of the City, manhole frames and covers shall be by Pamrex 24, available from Titus Industrial Group, 62292 Bryan Road, Bend, Oregon 97701, (541) 389-1975, or equal as approved by the City.

I. Manhole Marker Posts

A fiberglass manhole marker post shall be located adjacent to all manholes located in easement areas. The marker post shall be green in color, 3.75 inches wide (flat), 60-inches long and furnished with a 3-inch by 3-inch-high intensity white reflector (250 Candle Power) and a flexible anchor barb. Each post shall include the following decal: "Caution Sewer Manhole. Before digging, call 1-800-424- 5555, Utility Underground Location Center". Manhole markers shall be Carsonite Utility Marker CUM 375.

The marker posts shall be set so as to leave thirty-six (36) inches of the post exposed above grade.

J. Manhole Fall Protection

All manholes that are 20 feet or over in depth, measured from finished grade to invert of the pipe, shall be a minimum of 54 inches in diameter (or a size specified by the District) to facilitate the use of fall protection equipment.

S-3 TESTING GRAVITY SEWERS

The Developer shall furnish all facilities and personnel for conducting tests under the observation of the City. Methods other than low-pressure air test shall be subject to the approval of the City.

A. Preparation for Testing for Leakage

Before any leakage test is performed, the Developer shall clean and flush all gravity sewer lines with an approved rodding method or with a cleaning ball and clean water prior to testing. The inflatable diagonally ribbed rubber ball shall be of a size that will inflate to fit snugly into the pipe to be tested. After completion of backfill and cleaning, the completed gravity sewer, including side sewer stubs, shall be televised inspected. This will be permitted prior to paving. If the television inspection reveals excess debris, the Developer shall clean and televise again at its own expense. The sewer shall then be tested by the low-pressure air test method but only after all utilities are installed and the project paved. Except, however, that in certain conditions an exfiltration test may be required by the City.

The first section of pipe, not less than 300 feet in length, installed by each crew shall be tested in order to qualify the crew and/or the material. A successful installation of this first section shall be a prerequisite for further pipe installation by the crew. At the Developer's option, crew and/or material qualification testing may be performed at any time during the construction process after at least 2 feet of backfill has been placed over the pipe.

All debris flushed out of the line shall be removed at the first manhole where its presence is noted. In the event cemented or wedged debris or a damaged pipe shall stop the cleaning operation, the Developer shall remove the obstruction, and/or repair any damaged pipe. All visible leaks showing flowing water in pipelines or manholes shall be stopped even if the test results fall within the allowable leakage. The cleaning shall be carried out in such a manner as to not infiltrate water into existing facilities. Precautions shall be taken to prevent any damage caused by cleaning and testing. Any damage resulting shall be repaired by the Developer at its own expense. The manner and time of testing shall be subject to approval of the City.

B. Low Pressure Air Test

The sewer pipe shall be tested for leaks through the use of air in the following manner:

Immediately following the pipe cleaning and television inspection, the pipe installation shall be tested with low-pressure air. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 4.0 pound per square inch greater than the average back pressure of any ground water that may submerge the pipe. At least two minutes shall be allowed for temperature stabilization before proceeding further.

The rate of air loss shall then be determined by measuring the time interval required for the internal pressure to decrease from 3.5 to 2.5 pounds per square inch while maintaining the stipulated pressure greater than the pipe section's average adjacent groundwater back pressure.

The pipeline shall be considered acceptable if the total rate of air loss from any section tested in its entirety between manholes, cleanouts or pipe ends does not exceed the following table:

TABLE OF TEST TIME IN MINUTES AND SECONDS
Length of 6" Pipe (ft.)

Length of 8" Pipe (ft.)		0	50	100	150	200	250	300	350	400
	0	0	0:40	1:20	1:58	2:38	3:18	3:58	4:38	5:16
	50	1:10	1:50	2:30	3:10	3:48	4:28	5:08	5:48	5:56
	100	2:20	3:00	3:40	4:20	5:00	5:38	6:14	6:12	6:08
	150	3:32	4:10	4:50	5:30	6:10	6:30	6:26	6:22	6:18
	200	4:42	5:22	6:00	6:40	6:44	6:38	6:34	6:30	6:26

	250	5:52	6:32	6:48	6:58	6:50	6:44	6:40	6:36	6:32
	300	7:02	7:20	7:10	7:02	6:06	6:50	6:44	6:40	6:36
	350	7:34	7:22	7:14	7:06	7:00	6:54	6:50	6:44	6:42
	400	7:34	7:24	7:16	7:08	7:02	6:58	6:52	6:48	6:44

Test times will be provided by the City for combinations other than 8-inch mains and 6-inch laterals.

If the pipe installation fails to meet these requirements, the Developer shall determine at its own expense the source or sources of leakage, and shall repair (if the extent and type of repairs proposed by the Developer appear reasonable to the City) or replace all defective materials or workmanship. The completed pipe installation shall meet the requirements of this low-pressure air test or the alternative water exfiltration test before being considered for acceptance.

Plugs used to close the sewer pipe for the air test shall be securely braced with non-buoyant material to prevent the unintentional release of a plug, which can become a high velocity projectile. Gauges, air piping manifolds and valves shall be located at the top of the ground. No one shall be permitted to enter a manhole where a plugged pipe is under pressure. Air testing apparatus shall be equipped with a pressure release device such as a rupture disk or a pressure relief valve designed to relieve pressure on the pipe under test at 6 psi.

S-4 TESTING FORCE MAINS

The force mains shall be hydrostatically tested before being placed in service. Water for testing must be obtained by the Developer by arrangement with the City. A positive displacement type pump shall be furnished by the Developer for the testing. Feed for the pump shall be from a container, wherein the actual amount of “makeup” water can be measured.

The test pressure shall be either 200 pounds per square inch, or twice the system pressure, using the greater value and shall maintain the test for a period of not less than 1 hour. The test pressure shall be applied at the low end of the section tested.

The Developer shall provide temporary plugs, caps and blocking as required to pressure test the new force main.

Concrete thrust blocking for fittings shall be in place and the concrete “set” sufficiently to withstand the test pressure before starting the test. Prior to calling for the City to witness the pressure test, the Developer shall first perform a satisfactory pressure test. The allowable leakage rate per thousand feet of each size pipeline is as follows:

Allowable Leakage

Pipe Size	Gal. per Hour per 1,000 Ft. @ 200 psi
6"	0.64
8"	0.85
10"	1.06
12"	1.28

Any leakage caused by defective workmanship or materials shall be repaired, and the line shall again be tested to full compliance.

S-5 TELEVISED INSPECTION

After manhole adjustment, installation of ATB, channeling and the gravity sewer lines have been cleaned and flushed, the Developer shall provide a complete televised inspection.

The Developer shall perform a complete televised inspection of the sewer pipe and appurtenances and shall provide to the City, a colored audiovisual DVD or CD of the inspections together with a written log of the television inspection. The camera shall be a pan and tilt type equipped with adequate light and focusing to allow inspection of the sewer main, side sewers and full circumference inspection of main line joints and fittings. The City shall determine if the quality of the tape is acceptable.

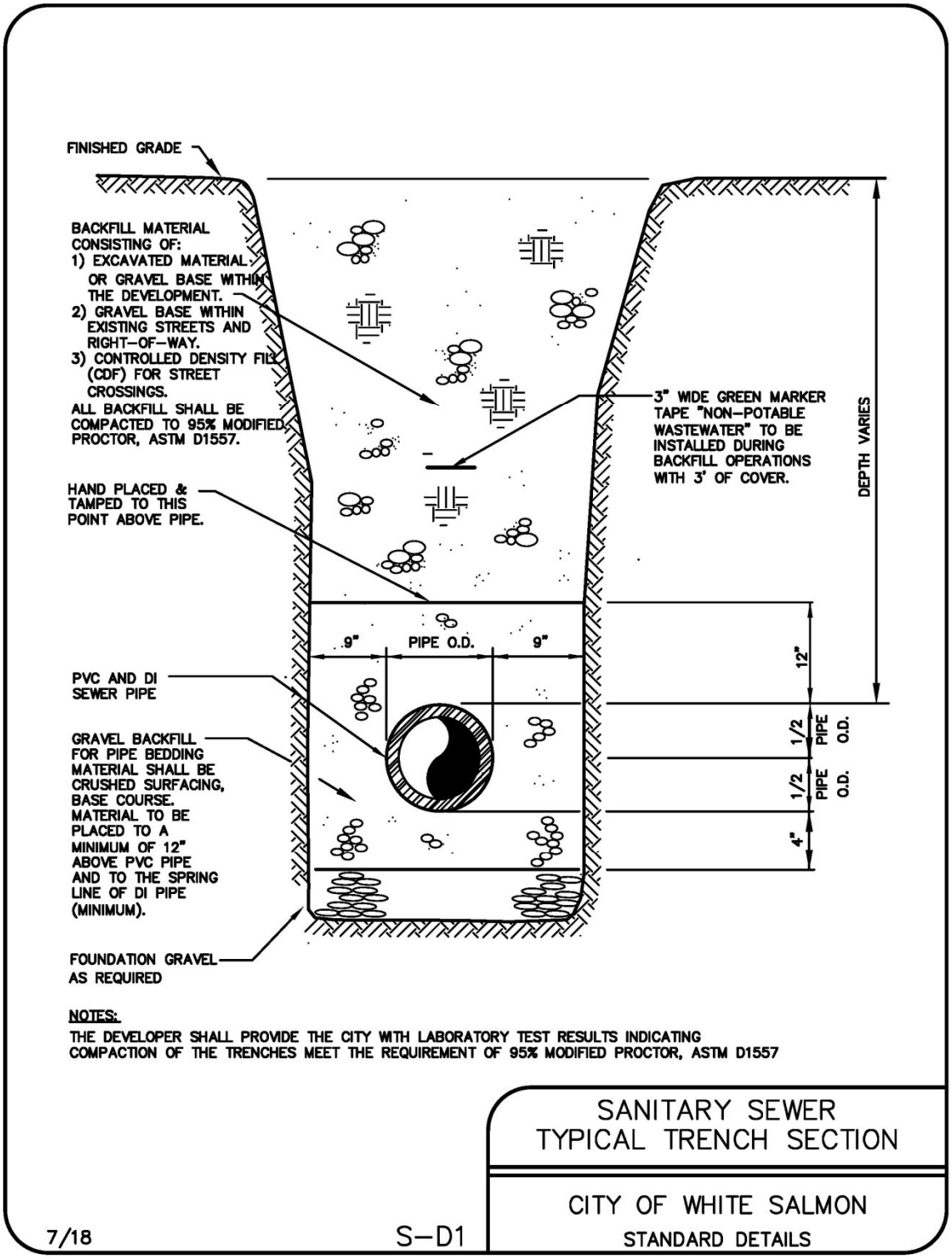
Immediately prior to the televised inspection, the Developer shall run water through each sewer line for 5 to 10 minutes to provide water for detection of any adverse grade sections visible by the presence of ponded water. The camera shall be stopped periodically at the ponded areas and the depth of water shall be measured with a ball of known diameter on the pull line. Ponding shall not be greater than 1/16-inch per inch of pipe diameter and not exceed 1/2 inch in depth. During the inspection, all tees and other fittings shall be logged as to exact location within 1 percent maximum error in measurement, wherein accuracy is checked with various fittings and the terminating manhole.

The City shall be notified 48 hours prior to any television inspection and this work shall be performed on a schedule to allow the City to witness the inspection.

If the television inspection shows indications of deflections in the pipe, the City may require that the Developer pull a proper sized mandrel for the main through the pipe to confirm that the pipe deflection does not exceed the manufacturer’s recommendations.

Any defects in material or installation identified by the television inspection shall be repaired as required by the City at the Developer’s expense.

END PART 3



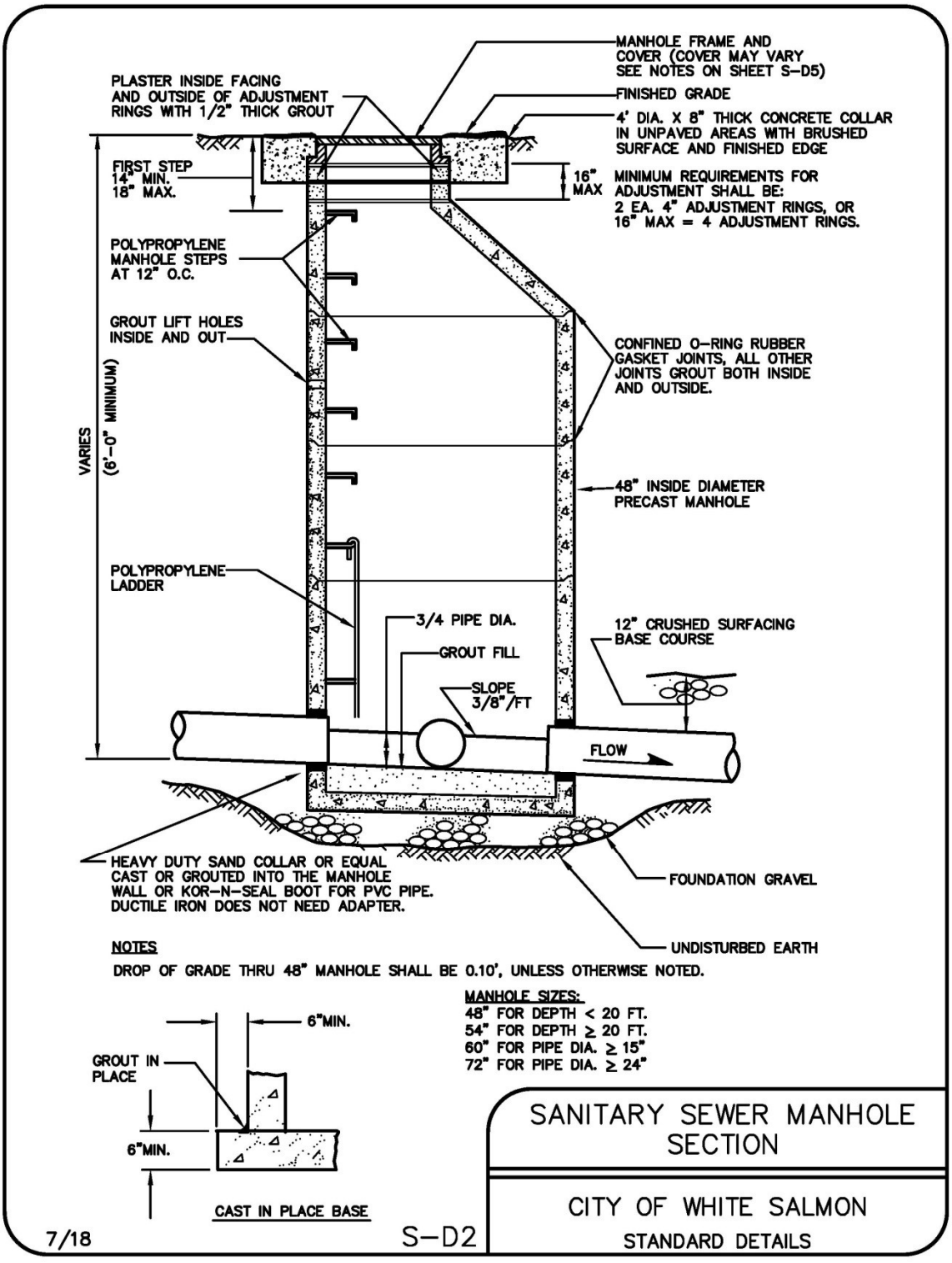
NOTES:

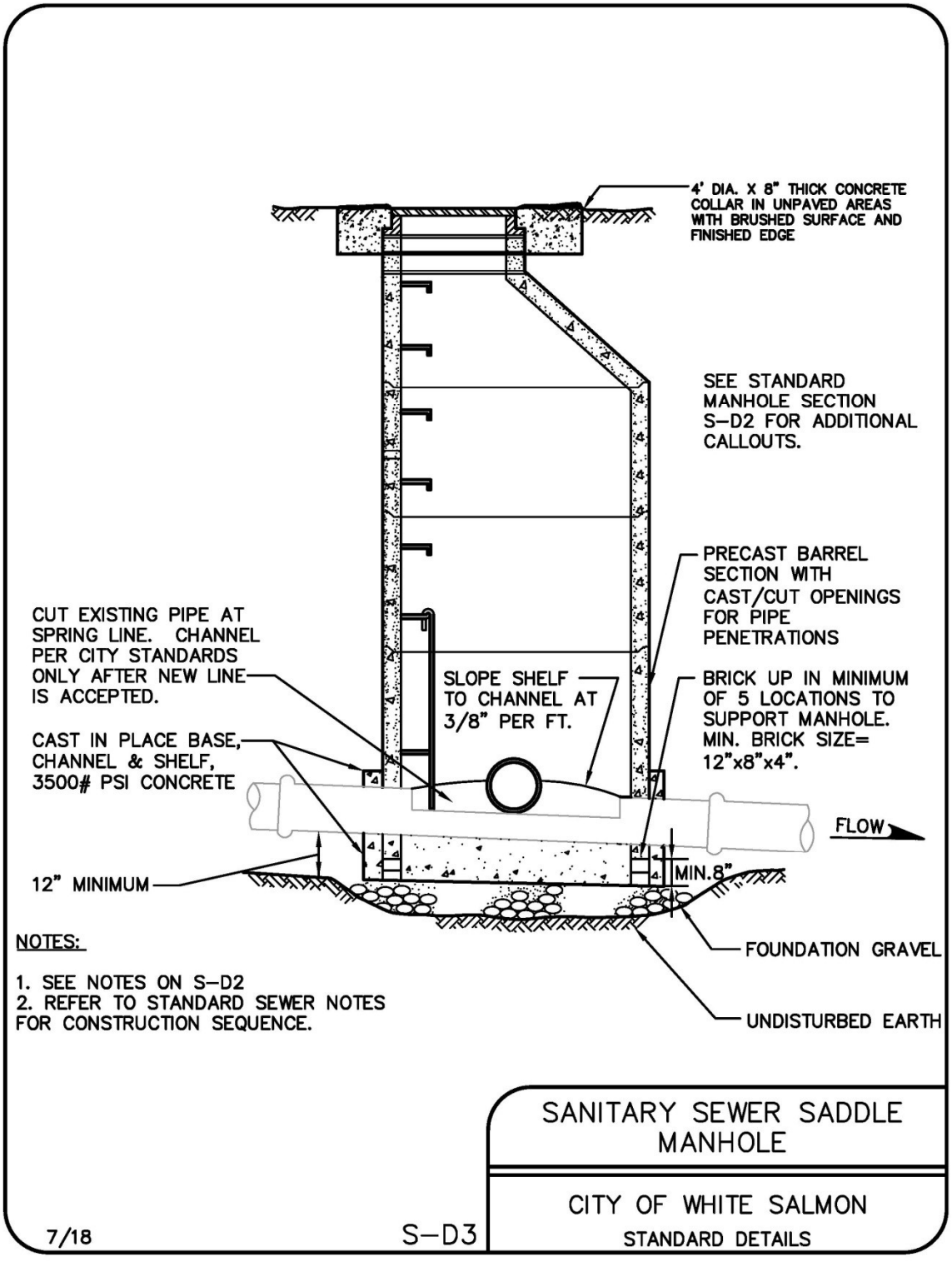
THE DEVELOPER SHALL PROVIDE THE CITY WITH LABORATORY TEST RESULTS INDICATING COMPACTION OF THE TRENCHES MEET THE REQUIREMENT OF 95% MODIFIED PROCTOR, ASTM D1557

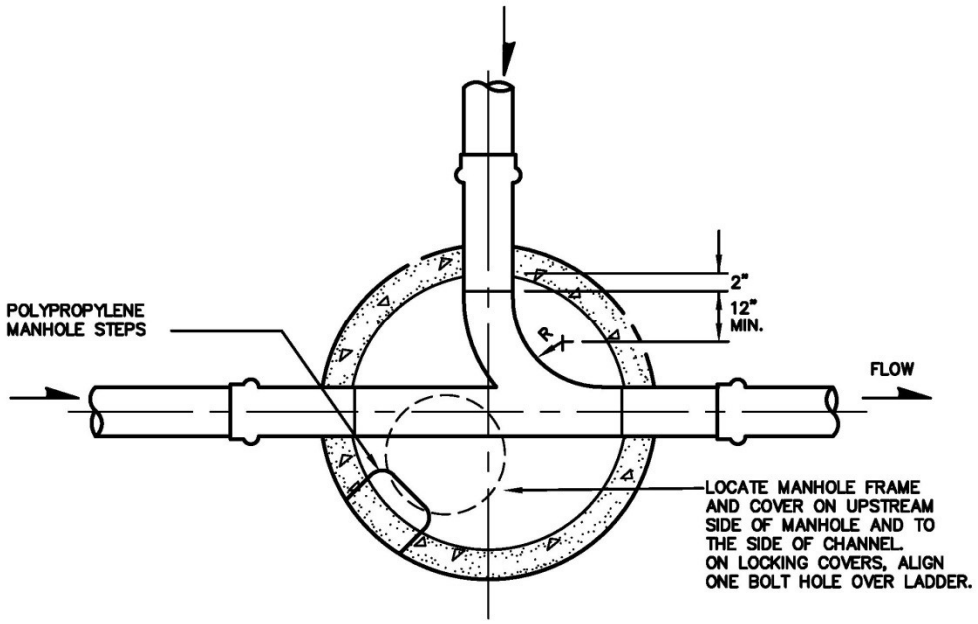
SANITARY SEWER
TYPICAL TRENCH SECTION

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 S-D1


MANHOLE FRAME AND COVER (COVER MAY VARY SEE NOTES ON SHEET S-D5)
PLASTER INSIDE FACING AND OUTSIDE OF ADJUSTMENT RINGS WITH 1/2" THICK GROUT
FINISHED GRADE
4' DIA. X 8" THICK CONCRETE COLLAR IN UNPAVED AREAS WITH BRUSHED SURFACE AND FINISHED EDGE
FIRST STEP 14" MIN. 18" MAX.
16" MAX
MINIMUM REQUIREMENTS FOR ADJUSTMENT SHALL BE: 2 EA. 4" ADJUSTMENT RINGS, OR 16" MAX = 4 ADJUSTMENT RINGS.
POLYPROPYLENE MANHOLE STEPS AT 12" O.C.
GROUT LIFT HOLES INSIDE AND OUT
CONFINED O-RING RUBBER GASKET JOINTS, ALL OTHER JOINTS GROUT BOTH INSIDE AND OUTSIDE.
VARIES (6'-0" MINIMUM)
48" INSIDE DIAMETER PRECAST MANHOLE
POLYPROPYLENE LADDER
3/4 PIPE DIA.
12" CRUSHED SURFACING BASE COURSE
GROUT FILL
SLOPE 3/8"/FT
FLOW
HEAVY DUTY SAND COLLAR OR EQUAL CAST OR GROUTED INTO THE MANHOLE WALL OR KOR-N-SEAL BOOT FOR PVC PIPE. DUCTILE IRON DOES NOT NEED ADAPTER.
FOUNDATION GRAVEL
UNDISTURBED EARTH
NOTES
DROP OF GRADE THRU 48" MANHOLE SHALL BE 0.10', UNLESS OTHERWISE NOTED.
MANHOLE SIZES:
48" FOR DEPTH < 20 FT.
54" FOR DEPTH ≥ 20 FT.
60" FOR PIPE DIA. ≥ 15"
72" FOR PIPE DIA. ≥ 24"
6"MIN.
GROUT IN PLACE
6"MIN.
CAST IN PLACE BASE
SANITARY SEWER MANHOLE SECTION
CITY OF WHITE SALMON
STANDARD DETAILS
7/18
S-D2


4' DIA. X 8" THICK CONCRETE COLLAR IN UNPAVED AREAS WITH BRUSHED SURFACE AND FINISHED EDGE
SEE STANDARD MANHOLE SECTION S-D2 FOR ADDITIONAL CALLOUTS.
PRECAST BARREL SECTION WITH CAST/CUT OPENINGS FOR PIPE PENETRATIONS
BRICK UP IN MINIMUM OF 5 LOCATIONS TO SUPPORT MANHOLE. MIN. BRICK SIZE= 12"x8"x4".
CUT EXISTING PIPE AT SPRING LINE. CHANNEL PER CITY STANDARDS ONLY AFTER NEW LINE IS ACCEPTED.
SLOPE SHELF TO CHANNEL AT 3/8" PER FT.
CAST IN PLACE BASE, CHANNEL & SHELF, 3500# PSI CONCRETE
FLOW
12" MINIMUM
MIN.8"
FOUNDATION GRAVEL
UNDISTURBED EARTH
NOTES:
1. SEE NOTES ON S-D2
2. REFER TO STANDARD SEWER NOTES FOR CONSTRUCTION SEQUENCE.
SANITARY SEWER SADDLE MANHOLE
CITY OF WHITE SALMON
STANDARD DETAILS
7/18
S-D3



NOTES

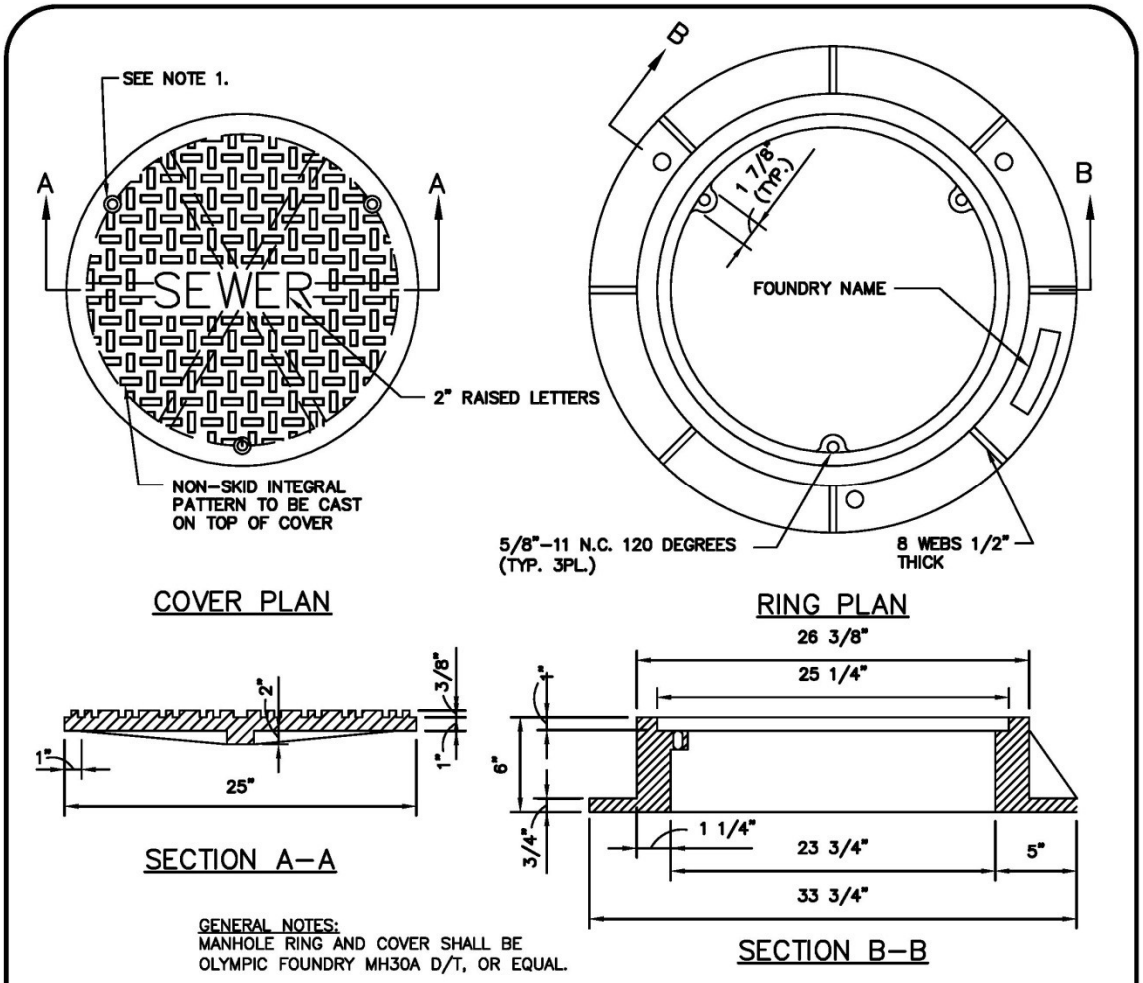
MANHOLE FRAME & LOCKING COVER

a. COVER SHALL HAVE THE WORD "SEWER" CAST WITH 2" HIGH LETTERS AND RAISED 3/8".
b. TOTAL WEIGHT OF FRAME & COVER SHALL BE 360 LBS. MIN.
c. DUCTILE IRON FRAME & COVER SHALL BE A.P.W.A. PLAN NO. 42.
d. NON-SKID PATTERN TO BE CAST INTEGRAL ON TOP OF COVER.
e. COVER SHALL BE PROVIDED WITH 3 EACH HOLES FOR LOCK DOWN PURPOSES.
f. PROVIDE 3 EACH 5/8", 11 N.C. SOCKET HEAD STAINLESS STEEL SCREWS, 3 5/8" LONG.
g. ALL HOLES FOR LOCKING COVER SHALL BE IN ALIGNMENT AND INTERCHANGEABLE.
h. FRAME AND COVER POSITIONED SO ONE OF THE LOCKING BOLTS IS CENTERED OVER THE STEPS.
i. WATERTIGHT MANHOLE COVER REQUIRED IN AREAS SUBJECT TO FLOODING AND/OR WHEN SPECIFIED BY THE DISTRICT. WATERTIGHT MANHOLE COVER SHALL BE PAMREX 24 OR EQUAL AS APPROVED BY THE DISTRICT.

SANITARY SEWER MANHOLE PLAN

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 S-D4



GENERAL NOTES:
MANHOLE RING AND COVER SHALL BE OLYMPIC FOUNDRY MH30A D/T, OR EQUAL.

COVER NOTES:

1. USE WITH THREE LOCKING BOLTS 5/8"-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) BOLTS, 3" LONG.
2. COVER MATERIAL IS DUCTILE IRON ASTM A536 GRADE 80-55-06.
3. SHALL CONFORM TO SEC. 9-05.15 OF THE STANDARD PECIFICATIONS, AS MODIFIED HEREIN.
4. APPROXIMATE WEIGHT OF COVER IS 150 LBS.
5. RATING - H30.

RING NOTES:

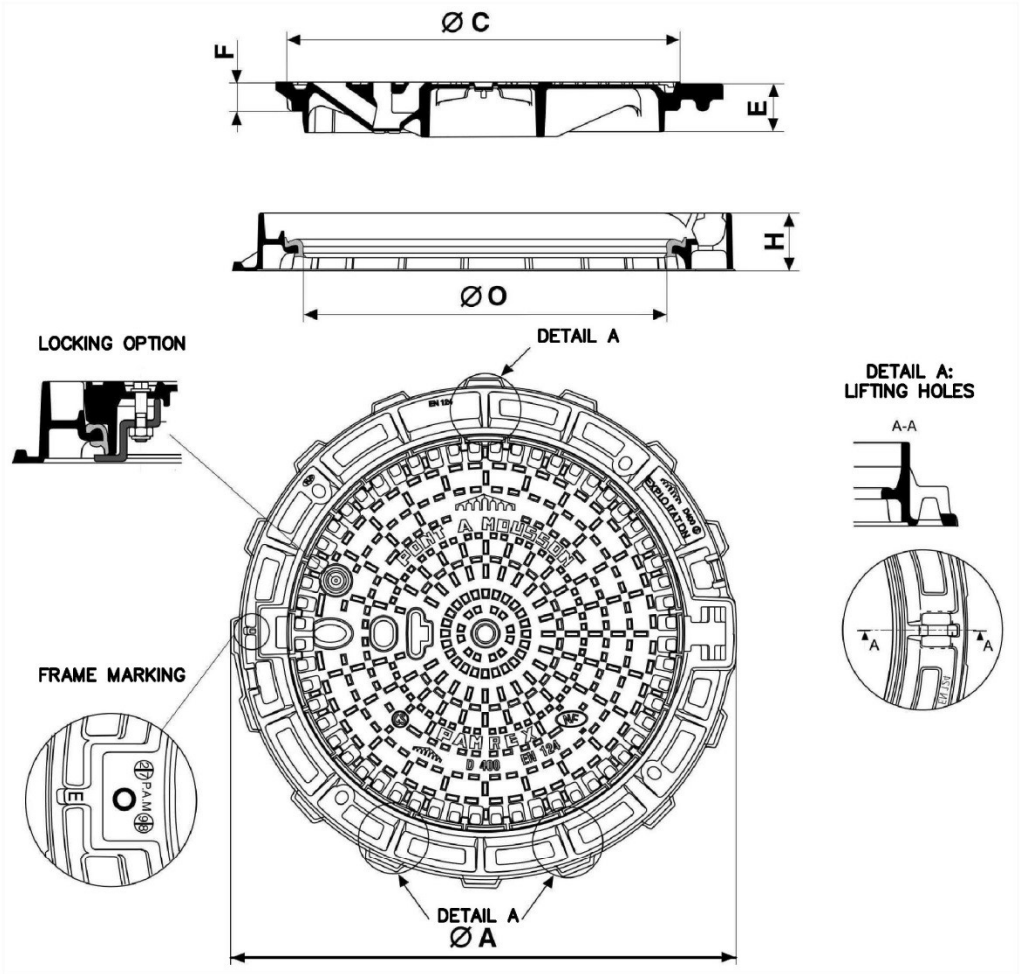
1. RING SHALL HAVE THREE 5/8"-11 NC HOLES THROUGH RING AT 120°.
2. RING MATERIAL IS GREY IRON, ASTM A-48 CLASS 30.
3. SHALL CONFORM TO SEC. 9-05.15 OF THE STANDARD SPECIFICATIONS, AS MODIFIED HEREIN.
4. APPROXIMATE WEIGHT OF RING IS 215 LBS.
5. RATING - H30.

STANDARD MANHOLE FRAME AND COVER

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 S-D5

Model	A inches	C inches	E inches	F inches	H inches	O inches	Reference	Weight lbs	Cover Weight lbs
Non ventilated	33	28	3.5	2	4	24	RE 60 R8 FD	195	122



NOTES:

MANHOLE COVER AND FRAME SHALL BE PAMREX. COVERS AND FRAMES SHALL BE MANUFACTURED FROM DUCTILE IRON IN ACCORDANCE WITH ISO 1083. COVERS SHALL BE HINGED AND INCORPORATE A 90 DEGREE BLOCKING SYSTEM TO PREVENT ACCIDENTAL CLOSURE. COVERS SHALL BE ONE MAN OPERABLE USING STANDARD TOOLS AND SHALL BE CAPABLE OF WITHSTANDING A TEST LOAD OF 120,000 LBS. FRAMES SHALL BE CIRCULAR WITH A 24" CLEAR OPENING AND SHALL INCORPORATE A 360° MECHANICALLY ATTACHED ELASTOMER SEATING GASKET FOR INFILTRATION CONTROL AND TRAFFIC SHOCK. THE HINGE BOX SHALL INCLUDE A SELF-CLEANING, DUAL WIPER INFILTRATION PLUG. THE FRAME DEPTH SHALL NOT EXCEED 4 INCHES, AND THE FLANGE SHALL INCORPORATE BEDDING SLOTS, BOLT HOLES AND LIFTING EYES. ALL COMPONENTS SHALL BE BLACK COATED. FRAME WEIGHT: 73 LBS. COVER WEIGHT: 122 LBS. TOTAL WEIGHT 195 LBS.PAMREX IS AVAILABLE FROM TITUS INDUSTRIAL GROUP 877-582-9899

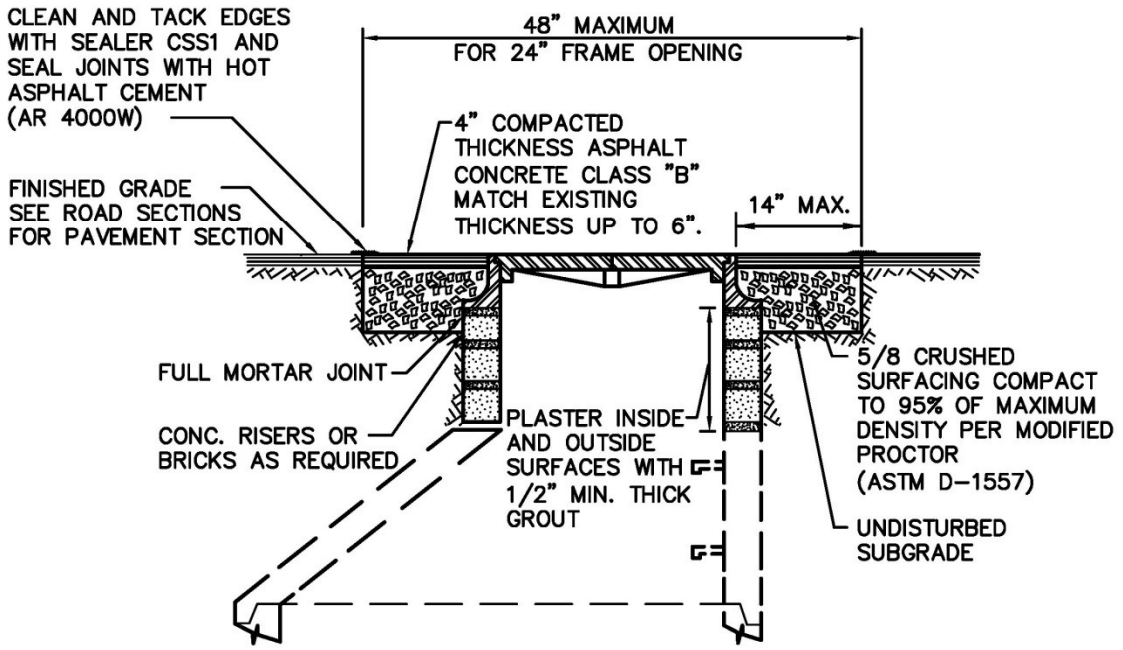
ALTERNATE MANHOLE FRAME AND COVER

CITY OF WHITE SALMON
STANDARD DETAILS

7/18

S-D6

CONSTRUCTION, INSTALLATION OR ADJUSTING TO GRADE OF MANHOLE RIMS SHALL CONFORM TO 2002 WSDOT STANDARD SPECIFICATION 7-05.



NOT TO SCALE

NOTE:

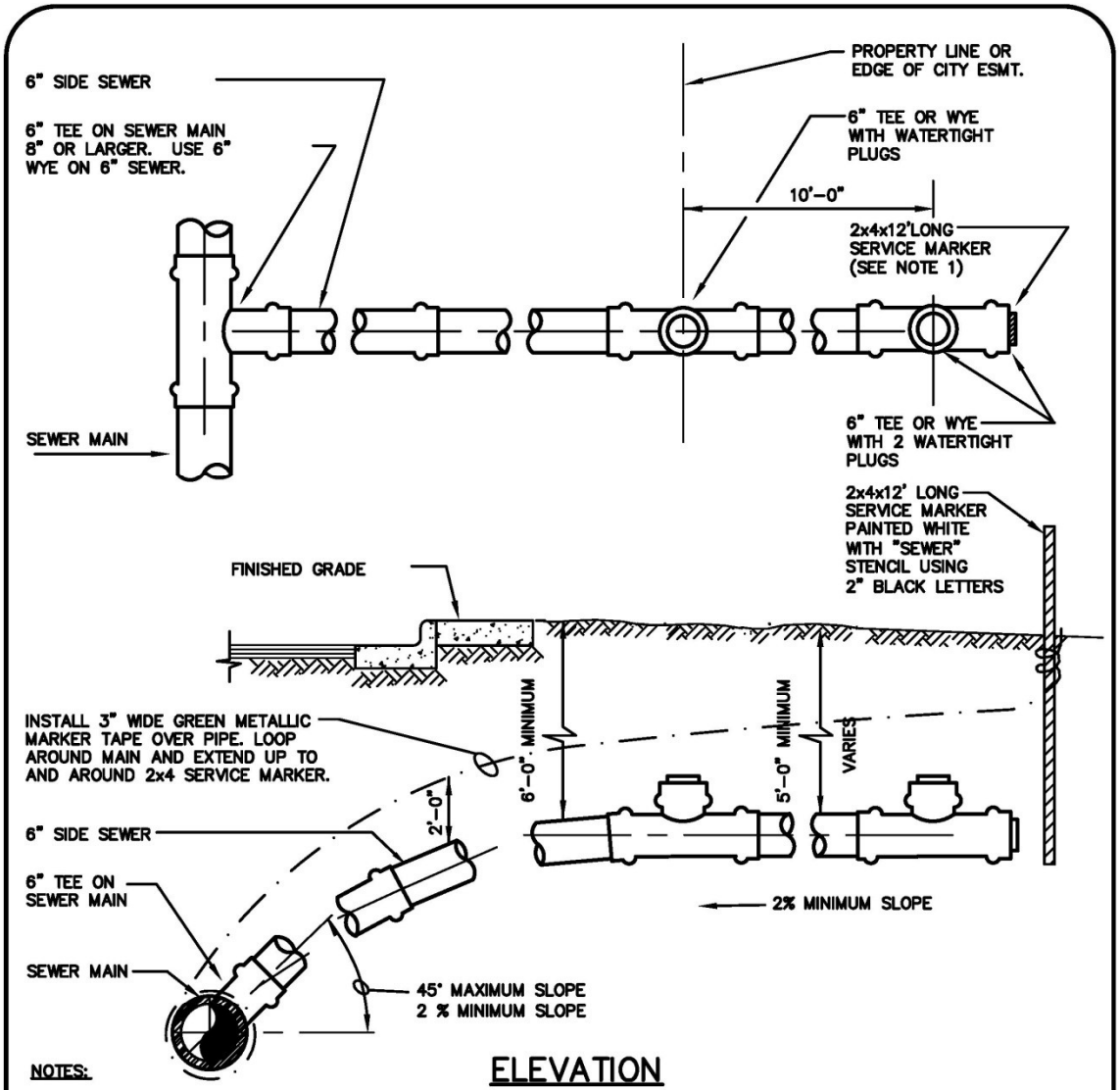
MAX. 4 EA, MIN. 2 EA 4" RISERS FOR NEW CONSTRUCTION

7/18

S-D7

MANHOLE GRADE ADJUSTMENT DETAIL

CITY OF WHITE SALMON
STANDARD DETAILS



ELEVATION

NOTES:

1. PAINT PORTION OF SERVICE MARKER THAT IS ABOVE FINISHED GRADE WITH WHITE PAINT. STENCIL WITH BLACK LETTERS "S/S" USING 3" HIGH LETTERS. LOCATE MARKER AT END OF EACH SERVICE.
2. SIDE SEWER TO BE LOCATED NEAR CORNER OF LOT ON LOWER SIDE OF PROPERTY UNLESS OTHERWISE APPROVED BY THE CITY.
3. MAXIMUM DEFLECTION NOT TO EXCEED PIPE MANUFACTURER RECOMMENDATIONS.
4. MANHOLE PER S-D2 REQUIRED 10' INTO PROPERTY ON ALL SIDE SEWERS OTHER THAN SINGLE FAMILY.

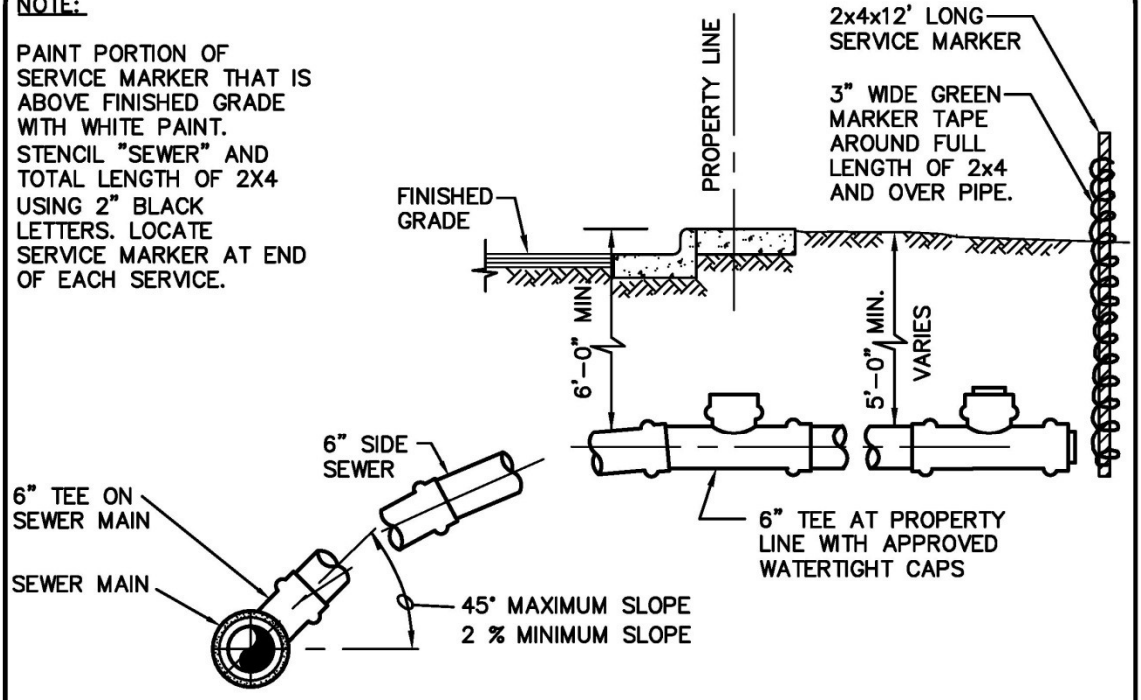
STANDARD SIDE SEWER

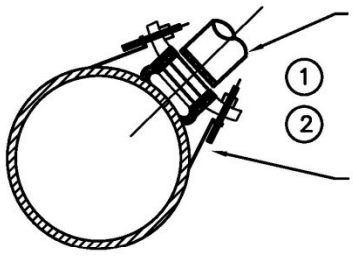
CITY OF WHITE SALMON
STANDARD DETAILS

7/18 S-D8

NOTE:

PAINT PORTION OF SERVICE MARKER THAT IS ABOVE FINISHED GRADE WITH WHITE PAINT. STENCIL "SEWER" AND TOTAL LENGTH OF 2X4 USING 2" BLACK LETTERS. LOCATE SERVICE MARKER AT END OF EACH SERVICE.





① INSERT-A-TEE SADDLE FOR CONCRETE AND PVC PIPE

② ROMAC STYLE "CB" SADDLE FOR PVC AND D.I. PIPE

NOTES:

1. SEE STANDARD SIDE SEWER DETAIL FOR NEW CONSTRUCTION.

2. DEVELOPER TO PROVIDE ALL MATERIALS, TRAFFIC CONTROL, PERMITS, SHORING AND MISC. WORK AS REQUIRED TO TAP THE MAIN AND INSTALL THE SIDE SEWER.

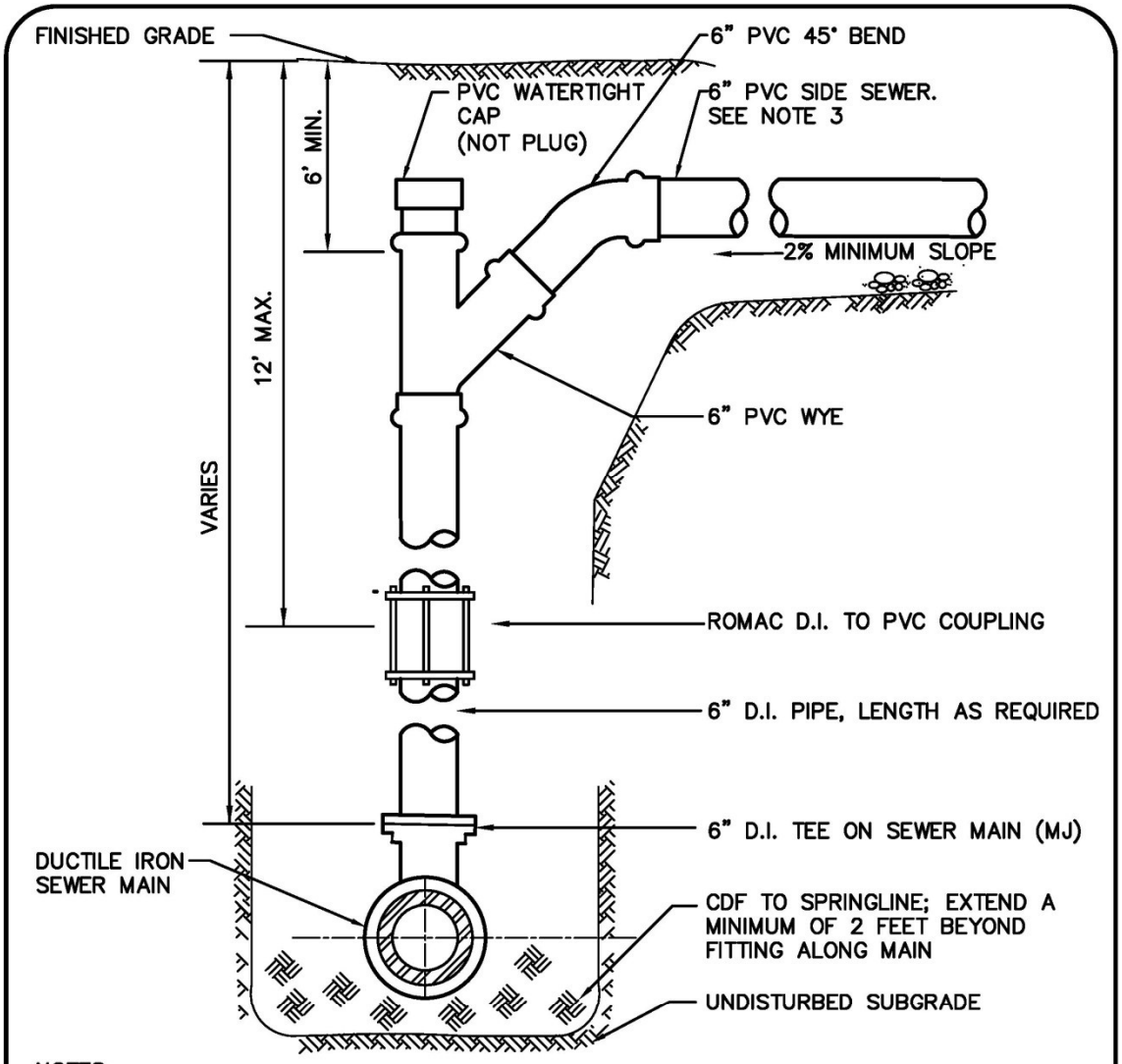
3. CUT-IN TEES ARE PERMITTED ONLY WITH CITY APPROVAL.

7/18

S-D9

SIDE SEWER LATERAL
CONNECTION TO EXISTING MAIN

CITY OF WHITE SALMON
STANDARD DETAILS



NOTES:

1. USE OF STANDING SIDE SEWER REQUIRES CITY APPROVAL.

2. USE WILL ONLY BE CONSIDERED WHEN DEPTH OF MAIN EXCEEDS 18' AND REQUIRED DEPTH OF SIDE SEWER IS LESS THAN 10' AT PROPERTY LINE, AND WHERE STANDARD SIDE SEWER CONNECTION IS NOT FEASIBLE.

3. EXTEND 6" CLEANOUT TO SURFACE AT PROPERTY LINE (OR OTHER LOCATION AS DETERMINED BY THE CITY).

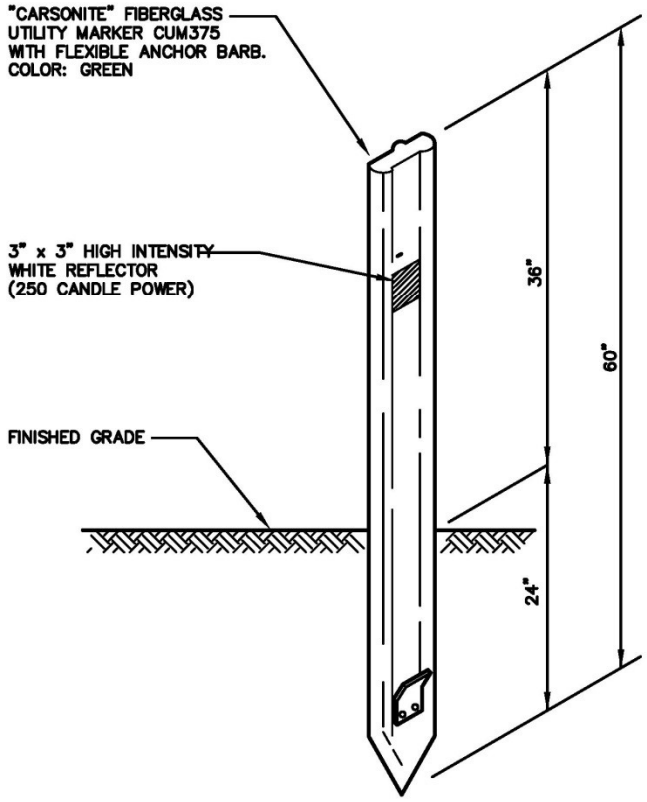
4. REFER ALSO TO STANDARD SIDE SEWER DETAIL FOR ADDITIONAL REQUIREMENTS.

7/18

S–D10

STANDING SIDE SEWER

CITY OF WHITE SALMON
STANDARD DETAILS



NOTES:

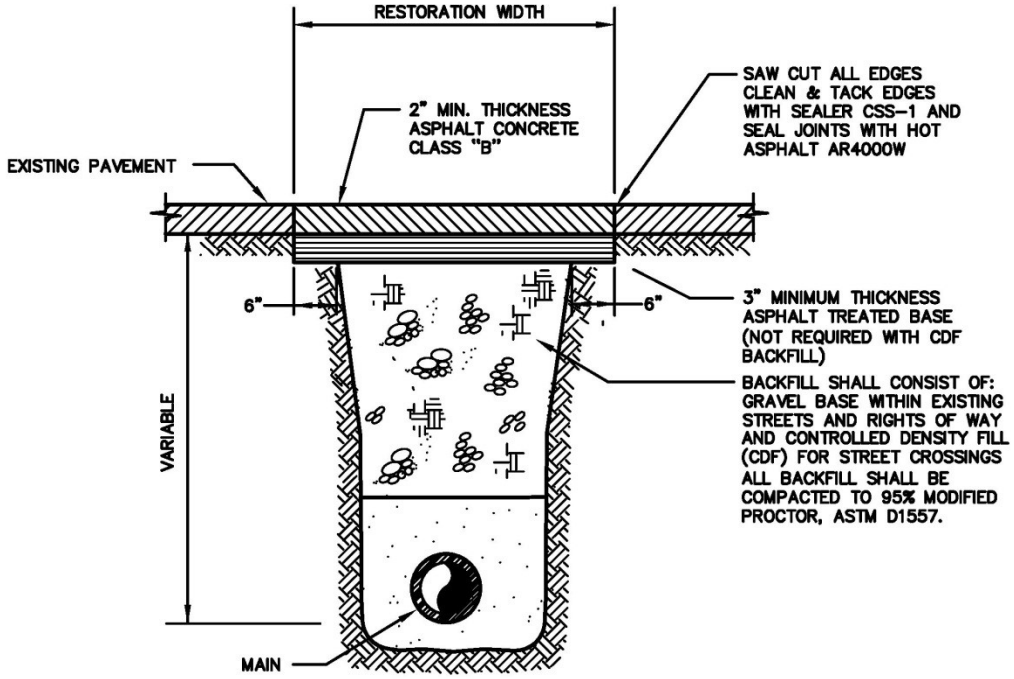
1. A MARKER POST SHALL BE LOCATED ADJACENT TO EACH MANHOLE LOCATED IN EASEMENT AREAS.
2. EACH POST SHALL INCLUDE THE FOLLOWING DECAL: "CAUTION SEWER MANHOLE, BEFORE DIGGING, CALL 1-800-424-5555, UTILITY UNDERGROUND LOCATION CENTER."

MANHOLE MARKER

CITY OF WHITE SALMON
STANDARD DETAILS

7/18

S-D11



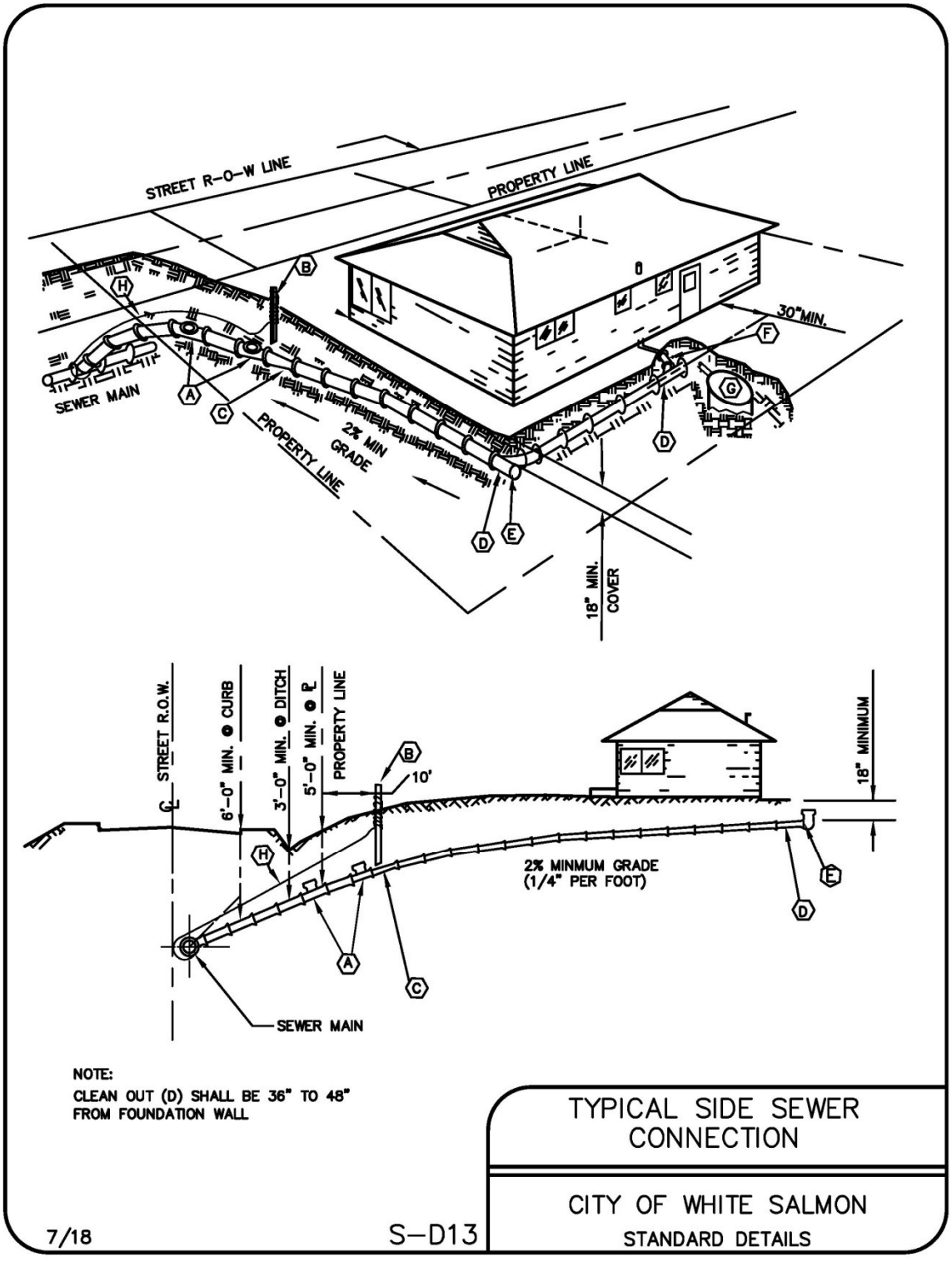
NOTES:

1. ALL ASPHALT STREETS AND DRIVEWAYS SHALL BE TEMPORARILY REPAIRED WITH COLD MIX, EXCEPT CROSSINGS WITH CDF SHALL BE COVERED WITH STEEL PLATES UNTIL THE CDF HAS CURRED TO ALLOW FOR PLACEMENT OF THE ASPHALT.
2. PATCH SHALL BE MACHINE ROLLED FLUSH WITH EXISTING PAVEMENT AND SHALL BE PLACED PER SEC. 5-04 OF THE WA. STATE D.O.T. SPECIFICATIONS.

ASPHALT PAVEMENT REPAIR

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 S-D12



NOTE:
CLEAN OUT (D) SHALL BE 36" TO 48" FROM FOUNDATION WALL

TYPICAL SIDE SEWER CONNECTION

CITY OF WHITE SALMON
STANDARD DETAILS

7/18

S–D13

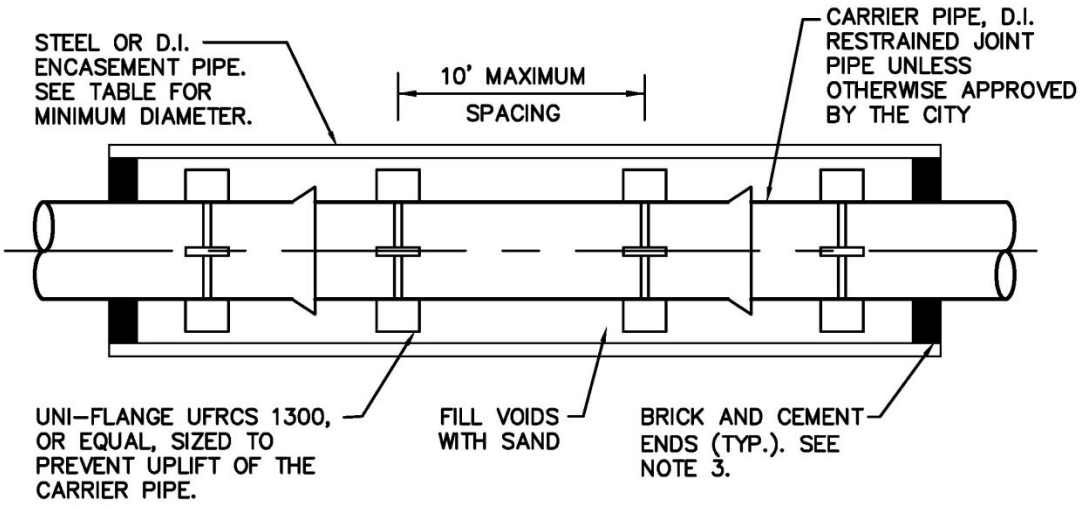
A. INSPECTION TEE
B. 2 X 4 SERVICE MARKER
C. APPROVED 6" X 4" REDUCER (SINGLE FAMILY RESIDENCE ONLY)
D. WYE (CLEANOUT) AND 45 DEGREE BEND
E. CLEANOUT WITH APPROVED PLUG. CLEANOUT SHALL BE BROUGHT TO WITHIN 18" OF SURFACE IN UNPAVED AREA OR BROUGHT TO SURFACE IN PAVED AREA WITH CAST-IRON COVER.
F. 45 DEGREE BEND. CONNECT HOUSE SEWER PIPE TO SIDE SEWER WITH APPROVED ADAPTER.
G. EXISTING SEPTIC TANK – CUT AND PLUG INLET LINE, PUMP TANK DRY AND FILL TANK WITH SUITABLE MATERIAL.
H. FURNISH AND INSTALL 3" WIDE GREEN METALLIC MARKER TAPE AT 2' OVER PIPE. LOOP AROUND MAIN AND EXTEND UP TO AND AROUND 2"X4" SERVICE MARKER.

GENERAL NOTES

1. SIDE SEWER PIPE SHALL BE 4" OR LARGER FOR SERVICING SINGLE FAMILY AND 6" FOR SERVICING MULTIPLE (DUPLEXES), COMMERCIAL ESTABLISHMENTS, SCHOOLS, OR ANY BUILDING OTHER THAN SINGLE FAMILY RESIDENCES, DUCTILE IRON OR PVC ASTM 3034, AND SHALL BE INSTALLED AT 2% MIN. GRADE (1/4" FALL PER FOOT). CONSTRUCTION ON PRIVATE PROPERTY MAY BE DONE BY OWNER BUT REQUIRES A PERMIT.
2. ALL PIPE JOINTS SHALL BE RUBBER GASKET TYPE.
3. ALL PIPE SHALL BE BEDDED AND ENCASED WITH CRUSHED SURFACING 1-1/4" BASE COURSE ROCK IN ACCORDANCE WITH SECTION 9-03-9(3) OF THE WSDOT STANDARD SPECIFICATIONS, UNLESS OTHERWISE APPROVED BY THE CITY. BEDDING MATERIAL SHALL BE INSTALLED WITH A MINIMUM OF 3" BELOW THE BOTTOM OF THE PIPE TO 6" ABOVE THE TOP OF THE PIPE UNLESS OTHERWISE APPROVED BY THE CITY. BEDDING WITH SAND OR PEA GRAVEL WILL NOT BE ACCEPTED
4. ON PRIVATE PROPERTY MIN. COVER SHALL BE 18" OVER TOP OF PIPE AT 30" DISTANCE FROM BUILDING.
5. PARALLEL WATER AND SEWER LINES SHALL BE 10' APART HORIZONTALLY WHEREVER POSSIBLE.
6. CLEANOUTS AT STRUCTURE CONNECTION SHALL BE 30" FROM STRUCTURE WALL UNLESS APPROVED BY THE CITY.
7. CLEANOUTS ARE REQUIRED FOR 45° BEND OR ANY COMBINATION OF BENDS EQUAL TO 45° OR GREATER. DISTANCE BETWEEN CLEANOUTS SHALL NOT EXCEED 100'. CLEANOUT SHALL BE A PLUGGED TEE OR A PLUGGED WYE LATERAL.
8. 6" SEWER PIPE IS REQUIRED IN THE STREET RIGHT-OF-WAY AND SHALL HAVE A 2% MIN. GRADE. CONSTRUCTION IN STREET MUST BE DONE BY A STATE LICENSED SIDE SEWER CONTRACTOR AND REQUIRES A RIGHT OF WAY PERMIT FROM THE CITY OR COUNTY.
9. SIDE SEWER SHALL BE INSPECTED BY THE CITY PRIOR TO BACKFILLING. SIDE SEWER SHALL BE PLUGGED & TESTED IN PRESENCE OF CITY INSPECTOR BY FILLING WITH WATER. LEAKAGE RATE SHALL NOT EXCEED 0.31 GAL/HR FOR 4" PIPE & 0.47 GAL/HR FOR 6" PIPE, PER 100' OF PIPE.
10. THE OWNER AND/OR HIS/HER CONTRACTOR HEREBY AGREE TO SAFEGUARD THE WORK DONE UNDER THIS PERMIT IN SUCH A MANNER AS TO PREVENT INJURY AND/OR DAMAGE TO THE PUBLIC. SUCH PRECAUTIONS SHALL INCLUDE THE EMPLOYMENT OF ALL NECESSARY DITCH SAFEGUARDS SUCH AS LANTERNS, BARRICADES, A TRENCH BOX FOR ANY DITCH OVER 4' DEEP AND SAFE ACCESS OR EGRESS THROUGH THE WORKING AREA.
11. BACK-WATER VALVES MAY BE REQUIRED IF DWELLING HAS POSSIBILITY OF SEWAGE BACKING UP INTO THE DWELLING.

SIDE SEWER INFORMATION

7/18 S-D14 CITY OF WHITE SALMON STANDARD DETAILS



NOTE:
MINIMUM ENCASEMENT INSIDE DIAMETER (I.D.) SHALL BE 24"

NOTES:

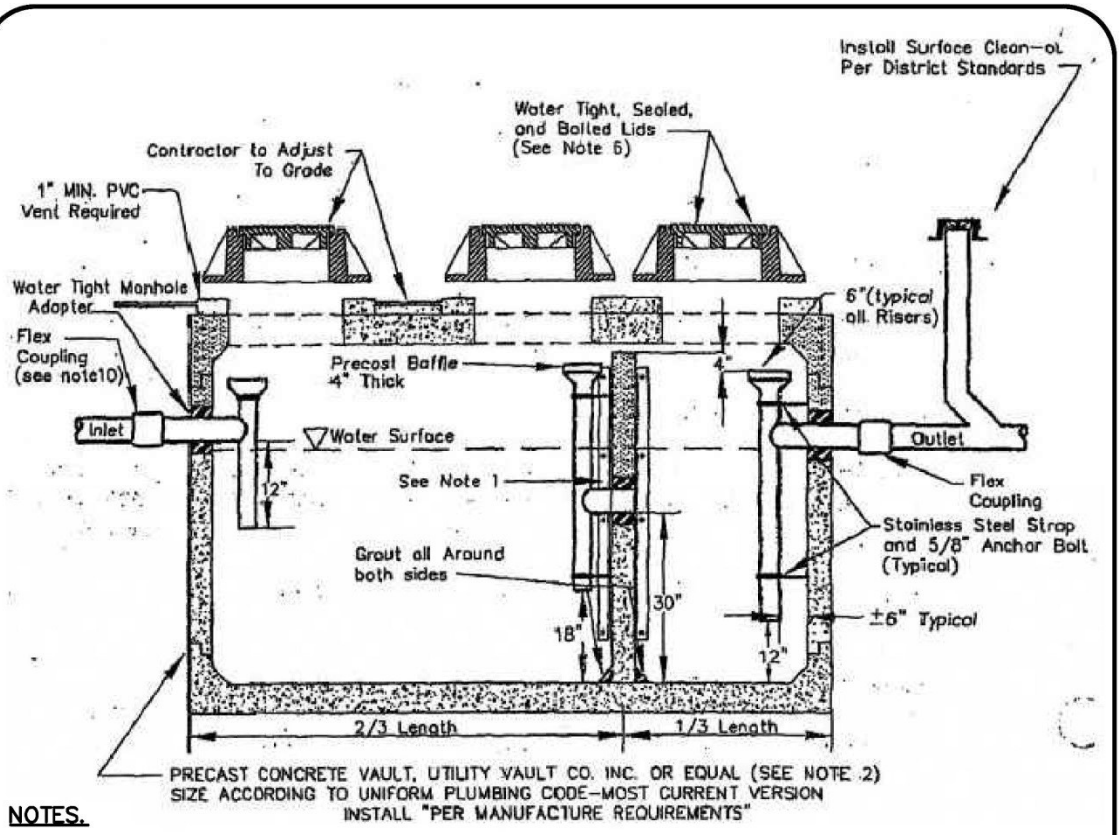
1. CONTRACTOR TO VERIFY LINE AND GRADE PRIOR TO FILLING VOIDS WITH SAND.
2. CARRIER PIPE WITHIN THE LENGTH OF THE ENCASEMENT PIPE SHALL HAVE RESTRAINED JOINTS.
3. REGULATORY AGENCY REQUIREMENTS SHALL SUPERCEDE CITY STANDARDS IF MORE STRINGENT.

7/18

S-D15

ENCASEMENT/CARRIER PIPES

CITY OF WHITE SALMON
STANDARD DETAILS



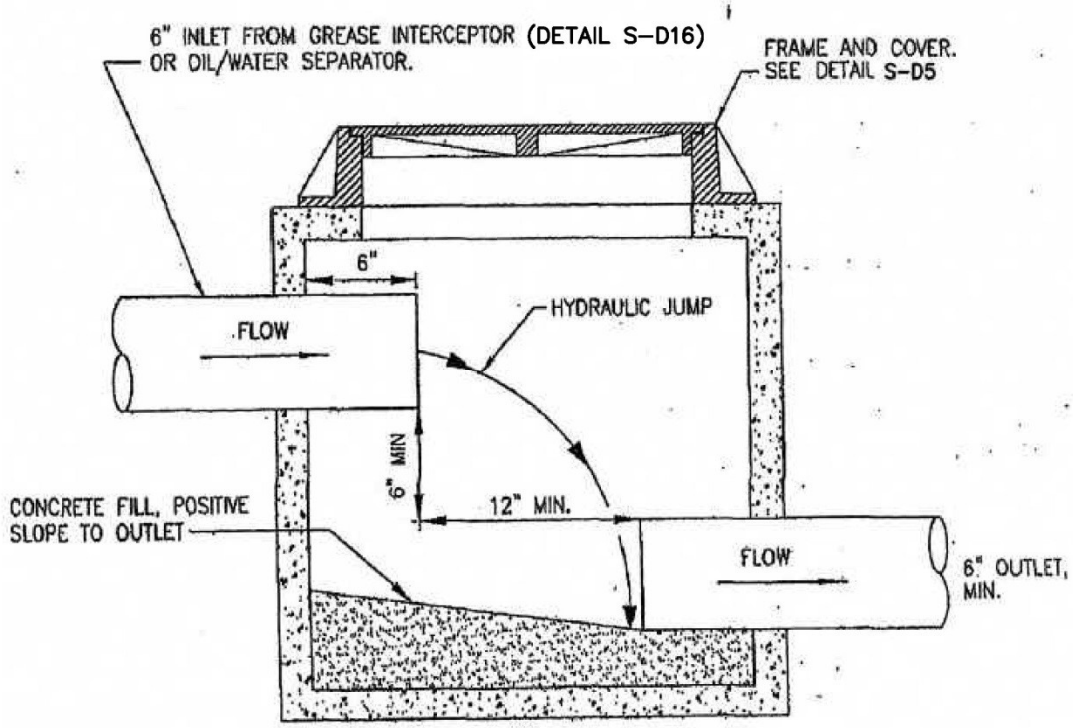
NOTES.

1. IF VAULT IS NOT SLOTTED TO ACCEPT PRECAST CONC. BAFFLE THEN PRECAST CONC. SHALL BE HELD IN PLACE BY (2) 3"x3"x3/8" ANGLE (4 FT. LONG) ATTACHED TO VAULT WALL WITH (4 EA.) 1/2" BOLTS AND NUTS (WITH WASHERS) SPACED 14" O.C. ANGLE AND FASTENERS SHALL BE STAINLESS STEEL.
2. PRECAST VAULT AND BAFFLE SHALL HAVE KNOCKOUTS AT ALL PIPE OPENINGS. IF KNOCKOUTS ARE NOT PRESENT THEN PIPE OPENINGS SHALL BE 2" LARGER THAN PIPE DIAMETER.
3. POSITION RISERS BELOW ACCESS OPENINGS TO ALLOW CLEAR ACCESS TO RISER AND VAULT CHAMBER.
4. LOCATE INTERCEPTOR WITHIN CLOSE PROXIMITY OF DRIVE FOR ACCESS BY MAINT. VEHICLE.
5. CONNECTIONS TO CONCRETE WALLS REQUIRE WATERTIGHT MANHOLE ADAPTERS. SEAL ALL PIPE CONNECTIONS WITH NON-SHRINK GROUT.
6. LIDS, FRAMES, AND BOLTS SHALL MEET CITY STANDARDS FOR MANHOLE LIDS AND/OR CLEANOUTS AS APPLICABLE.
7. GRAY-WATER ONLY. BLACK-WATER SHALL BE CARRIED BY SEPARATE SIDE SEWER.
8. CLEANOUT REQUIRED PER CITY STANDARDS.
9. FILL WITH CLEAN WATER PRIOR TO START-UP OF SYSTEM.
10. ROMAC 501 FLEX COUPLING OR APPROVED EQUAL.
11. DISCHARGE REQUIRED TO COMPLY WITH CITY DISCHARGE LIMITS.
12. ALL RINGS AND COVERS SHALL BE BOLT-LOCKING TYPE. COMPLY WITH CITY STANDARDS.
13. GREASE INTERCEPTORS SHALL HAVE VENTING PER UNIFORM PLUMBING CODE (1" MINIMUM).
14. VAULT AND FITTINGS SHALL BE WATERTIGHT.
15. VAULT OPENINGS MUST PROVIDE ABILITY TO OBTAIN SAMPLE OF DISCHARGE AND VISUALLY INSPECT INLET AND DISCHARGE.

GREASE INTERCEPTOR

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 S-D16



NOTES:

1. COMPLY WITH ALL REGULATORY REQUIREMENTS OF JURISDICTIONAL AUTHORITY.
2. OUTLET PIPE SHALL BE OF EQUAL OR GREATER DIAMETER THAN THE INLET PIPE.
3. STRUCTURE AND FRAME AND COVER SHALL BE H-20 LOAD RATED IF LOCATED IN TRAFFIC AREA.

SAMPLE CHAMBER FOR GREASE INTERCEPTOR & OIL/WATER SEPARATOR

CITY OF WHITE SALMON
STANDARD DETAILS

7/18 S-D17

APPENDIX

MAINTENANCE BOND
CITY OF WHITE SALMON

KNOW ALL MEN BY THESE PRESENTS: That, _____ as Principal, and _____ as surety, and jointly and severally held firmly bound unto the City of White Salmon of Klickitat County, State of Washington, (the "City") in the sum of _____ ($_____) dollars for the payment of which, well and truly to be made, we jointly and severally bind ourselves and our heirs, executors, administrators and assigns, firmly by these presents.

Whereas, the above-named Principal has pursuant to Developer Extension Agreement proposed Plans and Specifications, and constructed a _____ water _____ sewer system(s) in the (short) Plat of _____ Section _____, Township _____ North, Range _____ East, W.M., Klickitat County, State of Washington; and

Whereas, the City accepted the work by Resolution dated _____

Now, therefore, the conditions of this obligation are such that, if the Principal shall maintain and remedy said work free from defects in material and workmanship, as more fully set forth in Paragraphs 5, 6 and WS 24 of the Developer Extension Agreement referenced above and as contained in the Bill of Sale delivered to the City, for a period of not less than two years from the date of final acceptance, then upon written notification to the Principal by the City of inspection and approval of the work, this obligation shall be void; otherwise, it shall remain in full force and effect.

The Developer agrees to notify the City at least 30 days in advance of the end of the two year period to allow for inspection and to prepare letters of notifications.

Dated this _____ day of _____, 20___.

City of White Salmon
Maintenance Bond

Received and approved by
the City of White Salmon on:

Date: _____

By: _____

_____
Principal

_____
Authorized signature

_____
Print Name

_____
Address

_____
City State Zip

_____
Telephone Number

The above address to be used for notifying the Principal of repairs, etc., including post-notice of any emergency repairs made by City.

_____
Surety

_____

_____
Mailing Address

_____
Attorney in fact
(attach Power of Attorney)

PERFORMANCE, PAYMENT AND GUARANTY BOND

_____, as Principal, and _____ as Surety, a corporation duly licensed and authorized to do business in the State of Washington, are held and firmly bound unto the City of White Salmon hereinafter called "Owner", in the full sum of _____ dollars ($_____), for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has been awarded and has entered into that Contract dated _____ And attached hereto with Owner to perform the work as specified or indicated in the Contract Documents entitled City of White Salmon, _____ _____, according to the terms, conditions and covenants specified in the Contract including all of the contract documents therein referred to which are hereby referred to and made a part hereto as fully and completely as though set forth in detail herein.

NOW THEREFORE, if said Principal shall perform all the requirements of said Contract Documents required to be performed on its part, at the times and in the manner specified therein; and

If Principal shall pay for all materials, equipment, or other supplies, or for rental of same, used in connection with the performance of work contracted to be done, and for all amounts due under applicable State law for any work or labor thereon; and

If Principal shall pay the sales, use and any other applicable taxes of the State of Washington or any political subdivision of said State relating to this Agreement or to the work performed under this Agreement, and amounts due said State pursuant to Titles 50 and 51 of the Revised Code of Washington; and

If Principal shall indemnify and hold the Owner harmless for any defects in the workmanship or materials incorporated into the work for a period of two years after the final acceptance of the work;

THEN the obligation of Principal and Surety under this bond shall be void, but otherwise it shall remain in full force and effect.

This Bond shall inure to the benefit of any persons, companies, or corporations entitled to file claims under applicable State law.

In the event suit is brought upon this bond, a reasonable attorney's fee shall be awarded to the prevailing party.

Any alterations in the work to be done or the materials to be furnished, or changes in the time of completion, which may be made pursuant to the terms of the Contract Documents, shall not in any way release Principal or Surety thereunder, nor shall any extensions of time granted under the provisions of the Contract Documents release either Principal or Surety, and notice of such alterations or extensions of the Contract is hereby waived by Surety.

It is further agreed that nothing of any kind or nature that will not discharge the Principal shall operate as a discharge or release of the Surety, regardless of law, rule of equity or usage relating to the liability of sureties to the contrary notwithstanding.

SIGNED AND SEALED, this _____ day of _____, 20_____.

(Seal)	(Seal)
_____	_____
(Principal)	(Surety)
By: _____	By: _____
(Print Name)	(Print Name)
_____	_____
(Signature)	(Signature)
_____	_____
(Title)	(Title)
	Address: _____
	_____
	_____
	Telephone No.: _____

PARALLEL AND ADJOINING EASEMENT DEED

THIS INSTRUMENT made this _____ day of _____, 20_____, by _____ _____ herein called the "Grantor", and the City of White Salmon, White Salmon, Washington herein called the "Grantee".

WITNESSETH:

That said Grantor for valuable consideration does hereby bargain, sell and convey unto the said Grantee, a right-of-way and easement across, under and upon the exterior ten (10) feet parallel with and adjoining the street frontages, of all lots in which to install, lay, construct, renew, operate and maintain water and/or sewer mains, and related appurtenances for the purpose of serving this subdivision and other property with water and sewer service, together with the right to enter upon the lots at all times for the purposes stated upon the following described property in Klickitat County, Washington, more particularly described as follows:

ASSESSOR'S PROPERTY TAX NUMBER: _____

LEGAL DESCRIPTION:

And also granting to the Grantee and to those acting under said Grantee the use of such additional area immediately adjacent to said easement as shall be required for the construction and maintenance of the water and sewer mains and appurtenances in the above-described easement such additional area to be held to a minimum and returned to its original state by the Grantee or its agents.

That said Grantee shall have the right without prior institution of any suit or proceeding at law, at times as may be necessary, to enter upon said property for the purpose of construction, repairing, altering, or reconstruction of said mains shall be accomplished in such a manner that the private improvements existing in this right-of-way shall not be disturbed or destroyed, or in the event they are disturbed or destroyed, they will be replaced in as good a condition as they were immediately before the property was entered upon by the Grantee.

The Grantor shall retain the right to use the surface of said easement, so long as said use does not interfere with the installation and maintenance of the mains and related appurtenances and so long as no permanent buildings or structures are erected on said easement.

This easement shall be a covenant running with the land and shall be binding on the successors, heirs and assigns of both parties hereon.

_____

INDIVIDUAL

STATE OF WASHINGTON)

) ss.

COUNTY OF KLICKITAT)

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

Dated _____

_____

Notary Public in and for the state of
Washington, residing at _____
My Appointment Expires _____

****

CORPORATE/PARTNERSHIP

STATE OF WASHINGTON)

) ss.

COUNTY OF KLICKITAT)

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 state 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 _____

_____

Notary Public in and for the state of
Washington, residing at _____
My Appointment Expires _____

ON-SITE EASEMENT DEED

THE UNDERSIGNED, _____, Grantor(s), heirs, successors and assigns (hereinafter together referred to as "Grantor"), for the purpose of providing utility service to Grantor's property, hereby bargains, sells and conveys to Grantee, The City of White Salmon, its successors and assigns (hereinafter referred to as the "City"), from the following described property:

ASSESSOR'S PROPERTY TAX NUMBER: _____

LEGAL DESCRIPTION:

A permanent easement over, across, along, in, upon and under the following described portion of the above-described property:

That the City 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 no more than five (5) feet of property immediately adjacent to the described easement for the purpose of installing, constructing, operating, maintaining, removing, repairing, replacing, altering, or reconstruction of said utility together with all connections and appurtenances thereto (the "Facility"), together with the right of ingress to and egress from that property for the foregoing purposes.

The Grantor, by executing this Easement, and the City, by accepting and recording this Easement, do hereby mutually covenant and agree as follows:

1. The City shall, if either the property or easement is disturbed by the maintenance, removal, repair or replacement of the Facility, restore the surface of the property or easement as nearly as possible to the condition in which it existed at the commencement of said maintenance, removal, repair or replacement.

2. The City shall protect and save harmless Grantor from and against any and all claims, demands, loss, damage, expense and liability of every kind and description for any damage to or loss or destruction of property suffered by Grantor, or any persons, firms, or corporations, because of the maintenance of the Facility; provided, however, that this hold harmless shall not apply to Grantor's negligence, or to any damage or injury resulting from a violation of Paragraph 5 herein.

3. The Grantor warrants that the Grantor has good title to the above property and warrants the Grantee title to, and quiet enjoyment of, the easement conveyed hereby.

4. All rights, title and interest which may be used and enjoyed without interfering with the easement rights conveyed are reserved to the Grantor. The construction, installation or maintenance, after the date of this easement document, of structures of a permanent nature
    a. Within the above-described permanent easement, or;
    b. Outside the aforementioned easements, but intruding into the easement so as to interfere with maintenance and repair of the Facility shall be deemed an encroachment upon the easement rights and as to such structures the provisions of Paragraphs 1 and 2 shall not apply; and, further, Grantor shall be obligated to remove said encroachments at Grantor's expense.

5. Grantor covenants that no digging, tunneling or other form of construction activity shall be done on the easement or on Grantor's property which would disturb or damage the Facility, unearth or undermine the City's Facility or endanger the lateral support of the Facility.

6. The Grantor herein grants to the City and to those acting under the City the use of such additional area immediately adjacent to the easement necessary for the installation, operation, maintenance and repair of the Facility; provided that such additional area shall be held to a minimum and returned to its original state by the City.

7. Should either party hereto, or their heirs or assigns, institute suit to enforce any covenant or right granted herein, the prevailing party shall recover its costs of litigation, including a reasonable attorney's fee.

8. The covenants contained herein are intended to and shall run with the land and shall benefit and bind the parties and the respective successors and assigns.

DATED this _____ day of _____, 20____.

_____

_____

INDIVIDUAL

STATE OF WASHINGTON)

) ss.

COUNTY OF KLICKITAT)

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

Dated _____

_____

Notary Public in and for the state of
Washington, residing at _____
My Appointment Expires _____

****

CORPORATE/PARTNERSHIP

STATE OF WASHINGTON)

) ss.

COUNTY OF KLICKITAT)

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 state 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 _____

_____

Notary Public in and for the state of
Washington, residing at _____
My Appointment Expires _____

TEMPORARY CONSTRUCTION EASEMENT DEED

THE UNDERSIGNED, _____, Grantor(s), heirs, successors and assigns (hereinafter together referred to as "Grantor"), for the purpose of providing utility service to Grantor's property, hereby bargains, sells and conveys to Grantee, The City of White Salmon, its successors and assigns (hereinafter referred to as the "City"), from the following described property:

ASSESSOR'S PROPERTY TAX NUMBER: _____

LEGAL DESCRIPTION:

A temporary construction easement over, across, along, in, upon and under the following described portion of the above-described property:

That the City shall have the right, without prior institution of any suit or proceeding at law, at times as may be necessary, to enter upon the property or easement and adjoining property owned by the Grantor and his assigns and successors for the purpose of installing, constructing, operating, maintaining, removing, repairing, replacing, altering, or reconstruction of said utility together with all connections and appurtenances thereto (the "Facility"), together with the right of ingress to and egress from that property for the foregoing purposes.

Grantor does hereby convey and grant to the City a temporary construction easement for all purposes during the construction of the Facility over, across, along, in, upon and under the following described property, together with the right of ingress to and egress from that property for the foregoing purposes, to commence on the date of this instrument and to terminate on the date actual use thereof shall terminate. The temporary construction easement is legally described as:

The Grantor, by executing this Easement, and the City, by accepting and recording this Easement, do hereby mutually covenant and agree as follows:

1. The City shall, upon completion of construction of the Facility and before the termination of the temporary construction easement, remove all debris and restore the surface of the above-described property or easement as nearly as possible to the condition in which it existed at the date of this easement document.
2. The City shall, if the property or easements are disturbed by the maintenance, removal, repair or replacement of the Facility, restore the surface of the property or easements as nearly as possible

to the condition in which it existed at the commencement of maintenance, removal, repair or replacement.

3. The City shall protect and save harmless Grantor from and against any and all claims, demands, loss, damage, expense and liability of every kind and description and for any damage to or loss or destruction of property suffered by Grantor, because of the construction and/or maintenance of the Facility; provided, however, that this hold harmless shall not apply to Grantor's negligence, or to any damage or injury resulting from a violation of Paragraph 6 herein.
4. The Grantor warrants that the Grantor has good title to the above property and warrants the Grantee title to, and quiet enjoyment of, the easement conveyed hereby.
5. All rights, title and interest which may be used and enjoyed without interfering with the easement rights conveyed are reserved to the Grantor. The construction, installation or maintenance, after the date of this easement document, of structures of a permanent nature
    a. Within the permanent easement or within the temporary construction easement until such temporary construction easement shall have been terminated, or;
    b. Outside the aforementioned easements, but intruding into the easement so as to interfere with maintenance and repair of the Facility shall be deemed an encroachment upon the easement rights and as to such structures the provisions of Paragraphs 1,2 and 3 shall not apply; and, further, Grantor shall be obligated to remove said encroachments at Grantor's expense.
6. Grantor covenants that no digging, tunneling or other form of construction activity shall be done on the easement or on Grantor's property which would disturb or damage the Facility, unearth or undermine the City's Facility or endanger the lateral support of the Facility.
7. The Grantor herein grants to the City and to those acting under the City the use of such additional area immediately adjacent to the easement necessary for the installation, operation, maintenance and repair of the Facility; provided that such additional area shall be held to a minimum and returned to its original state by the City.
8. Access to Grantor's property shall be maintained at all times during the City's installation.
9. The City plans to assign the easement to the City of White Salmon on completion of the Facility and thereafter the Facility will be operated by the City. The Grantor consents to the assignment.
10. The Grantor may not connect Grantor's properties to the Facility without the consent of the City and then only upon payment of all charges imposed by the City for connection to and service by its facilities.
11. Should either party hereto, or their heirs or assigns, institute suit to enforce any covenant or right granted herein, the prevailing party shall recover its costs of litigation, including a reasonable attorney's fee.
12. The covenants contained herein are intended to and shall run with the land and shall benefit and bind the parties and the respective successors and assigns.

DATED this _____ day of _____, 20____.

_____

_____

INDIVIDUAL

STATE OF WASHINGTON)
) ss.
COUNTY OF KLICKITAT)

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

Dated _____

_____
Notary Public in and for the state of
Washington, residing at _____
My Appointment Expires _____

****

CORPORATE/PARTNERSHIP

STATE OF WASHINGTON)
) ss.
COUNTY OF KLICKITAT)

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 state 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 _____

_____
Notary Public in and for the state of
Washington, residing at _____
My Appointment Expires _____

CITY OF WHITE SALMON

ITEMIZED COST OF
PUBLIC WATER SYSTEM INSTALLATION
FOR _____
EXT. # _____

Date Accepted _____ Resolution # _____

DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
6" PVC PIPE			
8" PVC PIPE			
12" PVC PIPE			
FIRE HYDRANT ASSEMBLIES			
1" WATER SERVICE(S)			
2" WATER SERVICE(S)			

TOTAL _____

NOTE:

1. QUANTITY HAS BEEN COMPLETED BY THE CITY'S FIELD INSPECTOR OR CONSULTING ENGINEER, OR FROM RECORD DRAWINGS. OWNER/DEVELOPER SHALL INSTALL THE UNIT COST AND SIGN THE DOCUMENT IF IN AGREEMENT WITH THE QUANTITIES LISTED.
2. INCLUDE IN EACH PIPE PRICE (TOTAL COST & UNIT COST) THE COST OF GATE VALVES, FITTINGS, BLOW OFF ASSEMBLIES, AIR RELIEF ASSEMBLIES, PAVEMENT REPAIRS, AND ANY OTHER ITEMS NOT OTHERWISE LISTED ABOVE.
3. INCLUDE IN EACH FIRE HYDRANT PRICE THE MAIN LINE TEE, HYDRANT VALVE, VALVE BOXES, THRUST BLOCKS, HYDRANT POSTS AND OTHER RELATED ITEMS FOR A COMPLETE HYDRANT ASSEMBLY INSTALLATION.
4. BLANK SPACES RESERVED FOR MAJOR COST ITEMS SUCH AS PRESSURE REDUCING VAULTS, PRESSURE RELIEF VAULTS, PUMP STATIONS, ETC.

I _____, OWNER/DEVELOPER OF THE ABOVE DESCRIBED PROPERTY HAVE
(PRINT)
SUBMITTED THE UNIT COSTS FOR THAT PROPERTY AND AGREE TO THE CITY OF WHITE SALMON'S LISTED QUANTITIES.

DATE _____ SIGNED _____
_____

BILL OF SALE – WATER

THE UNDERSIGNED hereby conveys and transfers to THE CITY OF WHITE SALMON (the "City") the following described personal property:

This conveyance is made in consideration of the City's agreement to provide routine maintenance of said property and to provide water services pursuant to the City's ordinances, policies, resolutions and regulations, which may be amended from time to time.

The undersigned, and its successors and assigns, covenants and agrees with the City, its successors and assigns, that the undersigned is the owner of said property and has the right and authority to sell the same, that the property is free of all liens or encumbrances, and that the undersigned will, and does, hereby warrant and agree to defend the title of the City, its successors and assigns, against the claims of all third parties claiming to own the same or claiming any interest therein or encumbrance thereon.

The undersigned warrants that all bills and taxes relating to the construction and installation of the water main and appurtenances have been paid in full and that there are no lawsuits pending involving this project. The undersigned further warrants that in the event any lawsuit is filed as a result of, or involving, this project the undersigned will undertake to defend the lawsuit and will accept responsibility for all costs of litigation, including costs on appeal, and will pay and hold the City harmless on any judgment rendered against the City.

The undersigned further warrants that all laws, ordinances and regulations respecting construction of this project have been complied with, and that the property is in proper working condition, order and repair and fit for purposes intended; i.e., for use as a water distribution system including distribution and supply lines adequate for the service intended and has been constructed in accordance with the conditions, standards and specifications of the City.

The undersigned covenants and agrees with the City to replace, repair and correct any defect in materials or workmanship in respect to the personal property subject to this Bill of Sale arising during a period of two (2) years from the date hereof, without cost to the City. The undersigned shall further warrant the corrected work for two (2) years after acceptance of the corrected work by the City.

DEVELOPER:

By _____

Its _____

INDIVIDUAL

STATE OF WASHINGTON)
)ss.
COUNTY OF KLICKITAT)

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 _____

_____
Notary Public in and for the State of Washington, residing at
_____. My Appointment Expires _____.

CORPORATE / PARTNERSHIP

STATE OF WASHINGTON)
)ss.
COUNTY OF KLICKITAT)

I certify that I know or have satisfactory evidence that _____
is the person who appeared before me, and said person acknowledged that _____ signed this instrument, on oath stated that _____ 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 _____

_____
Notary Public in and for the State of Washington, residing at
_____. My Appointment Expires _____.

CITY OF WHITE SALMON

ITEMIZED COST OF
PUBLIC SEWER SYSTEM INSTALLATION
FOR _____
EXT. # _____

Date Accepted _____ Resolution # _____

DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
8" SEWER MAIN			
10" SEWER MAIN			
12" SEWER MAIN			
SIDE SEWER(S)			
MANHOLE(S)			

TOTAL _____

NOTE:

1. QUANTITY HAS BEEN COMPLETED BY THE CITY'S FIELD INSPECTOR OR CONSULTING ENGINEER, OR FROM RECORD DRAWINGS. OWNER/DEVELOPER SHALL INSTALL THE UNIT COST AND SIGN THE DOCUMENT IF IN AGREEMENT WITH THE QUANTITIES LISTED.
2. INCLUDE IN EACH PIPE PRICE (TOTAL COST & UNIT COST) THE COST OF FITTINGS, SELECT BACKFILL COMPACTION, PAVEMENT REPAIRS, AND ANY OTHER ITEMS NOT OTHERWISE LISTED ABOVE.
3. BLANK SPACES RESERVED FOR MAJOR COST ITEMS SUCH AS FORCE MAINS,VAULTS, PUMP STATIONS, ETC.

I _____, OWNER/DEVELOPER OF THE ABOVE DESCRIBED PROPERTY HAVE
(PRINT)
SUBMITTED THE UNIT COSTS FOR THAT PROPERTY AND AGREE TO THE CITY OF WHITE SALMON'S LISTED QUANTITIES.

DATE _____ SIGNED _____
_____

BILL OF SALE – SEWER

THE UNDERSIGNED hereby conveys and transfers to THE CITY OF WHITE SALMON (the "City") the following described personal property:

This conveyance is made in consideration of the City's agreement to provide routine maintenance of said property and to provide sewer services pursuant to the City's ordinances, policies, resolutions and regulations, which may be amended from time to time.

The undersigned, and its successors and assigns, covenants and agrees with the City, its successors and assigns, that the undersigned is the owner of said property and has the right and authority to sell the same, that the property is free of all liens or encumbrances, and that the undersigned will, and does, hereby warrant and agree to defend the title of the City, its successors and assigns, against the claims of all third parties claiming to own the same or claiming any interest therein or encumbrance thereon.

The undersigned warrants that all bills and taxes relating to the construction and installation of the sewer main and appurtenances have been paid in full and that there are no lawsuits pending involving this project. The undersigned further warrants that in the event any lawsuit is filed as a result of, or involving, this project the undersigned will undertake to defend the lawsuit and will accept responsibility for all costs of litigation, including costs on appeal, and will pay and hold the City harmless on any judgment rendered against the City.

The undersigned further warrants that all laws, ordinances and regulations respecting construction of this project have been complied with, and that the property is in proper working condition, order and repair and fit for purposes intended; i.e., for use as a sewer collection system including collection and conveyance lines adequate for the service intended and has been constructed in accordance with the conditions, standards and specifications of the City.

The undersigned covenants and agrees with the City to replace, repair and correct any defect in materials or workmanship in respect to the personal property subject to this Bill of Sale arising during a period of two (2) years from the date hereof, without cost to the City. The undersigned shall further warrant the corrected work for two (2) years after acceptance of the corrected work by the City.

DEVELOPER:

By _____

Its _____

INDIVIDUAL

STATE OF WASHINGTON)
)ss.
COUNTY OF KLICKITAT)

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 _____

_____
Notary Public in and for the State of Washington, residing at
_____. My Appointment Expires _____.

CORPORATE / PARTNERSHIP

STATE OF WASHINGTON)
)ss.
COUNTY OF KLICKITAT)

I certify that I know or have satisfactory evidence that _____
is the person who appeared before me, and said person acknowledged that _____ signed this instrument, on oath stated that _____ 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 _____

_____
Notary Public in and for the State of Washington, residing at
_____. My Appointment Expires _____.

Industrial Pretreatment Program Preliminary Survey
City of White Salmon

(Please fill in all blanks to the best of your ability.)

SECTION I: GENERAL INFORMATION

A. *INDUSTRIAL USER, GENERAL*

1. Company name _____
2. Division name (if applicable) _____
3. Mailing address:
a. Street or P.O. Box _____
b. City, state and zip _____
4. Facility address:
a. Street _____
b. City, state and zip _____
5. Business type (check all that apply)
Manufacturing _____
Distributing _____
Retail _____
Service _____
Other _____
6. Number of employees at this facility:_____
7. Please provide all 4-digit Standard Industrial Classification (SIC) Codes applicable to this facility.

_____
8. Has this facility been issued a local, state or federal wastewater discharge permit? Yes _____ No ____
If yes, permit number _____ Agency _____
9. Does this facility have floor drains that discharge to the sewer system? Yes _____ No ____
10. Does this facility have on-site electrical generation facilities and/or electrical transformers? Yes _____ No ____
11. Brief description of business activities on premises:

_____
_____
_____
_____

SECTION II: WATER/WASTEWATER DATA

A. WATER USE

1. Please indicate the source and approximate usage rate of water.
Source name Quantity, GPD

2. Please give a brief description of how water is used at this facility.
_____
_____
_____

B. WASTEWATER DATA

1. Number of sewer connections _____
2. Check type of discharge: Batch _____Continuous _____
3. Approximate discharge in gallons per day for:
a. Sanitary wastes _____
b. Industrial process wastewater _____
c. Cooling water _____
d. Other _____
Describe "other"_____
_____
_____
Please note if any of the above wastewaters are not discharged to the City sewerage system.

4. Provide the following information to the best of your ability:

	YES	NO	UNKNOWN
a. Does wastewater pH ever fall below 5.5 or exceed 10?			
b. Does wastewater temperature ever exceed 140oF (60oC)?			
c. Do wastewater biological oxygen demand (BOD) or suspended solids ever exceed 300 mg/l			
d. Do wastewater oils and grease ever exceed 100 mg/l?			

5. Wastewater treatment:

Does this facility practice any sort of wastewater treatment prior to discharge? Yes _____ No ____

If yes, describe: _____
_____
_____

6. Waste disposal:

Are any liquid wastes from this facility:
a. Disposed of other than to the sanitary sewer system?
Yes _____ No ____

If yes, describe: _____
_____
_____

b. Recycled or recovered: Yes _____ No ____
If yes, describe: _____
_____
_____

7. Please provide a general list of chemicals and raw materials used at this facility._____
_____
_____
_____
_____

The information contained in this questionnaire is familiar to me, and to the best of my knowledge and belief, is true, complete and accurate.

_____ _____
Contact official Telephone

_____ _____
Name of signing official Title

_____ _____
Signature Date