

**Appendix A**  
**SEPA Checklist and Determination of Non-Significance**

City of Chehalis  
FINAL  
Determination of Non-Significance



Issued: 5/2/2011

SEPA-11-214  
Page 1 of 1

Description of Project or Proposal:  
2011 WATER COMPREHENSIVE PLAN UPDATE

Applicant or Proponent: CITY OF CHEHALIS

Location of Project or Proposal: The established city of Chehalis water system service area.

Lead Agency: City of Chehalis, Department of Community Services

The Lead Agency for this project or proposal has determined that it does not have a probable significant adverse impact on the environment under the criteria and definitions contained in the SEPA rules. An Environmental Impact Statement (EIS) is not required under the provisions of RCW 43.21C.030(2)(c). This decision was made after a review of a completed environmental checklist and other information submitted with the application or proposal, and a review of how applicable development regulations would accomplish mitigation. This information is on file with the lead agency and is available for public review during regular business hours at the office address listed below.

Any appeal from this decision must be initiated consistent with the provisions of the Chehalis Municipal Code, Section 17.15.270. Appeals must contain factual statements directly related to the project or proposal in order to be considered.

Information regarding local agency permit requirements applicable to this project or proposal is available from the SEPA Responsible Official at the office address identified below.

SEPA Responsible Official: Planner

Mailing Address: 1321 S. Market Blvd., Chehalis WA 98532

Office Address: 1321 South Market Blvd., Chehalis WA

Phone: (360) 345-2229 e-Mail: [comdev@ci.chehalis.wa.us](mailto:comdev@ci.chehalis.wa.us) File#: SEPA-11-214

RO signature: \_\_\_\_\_

Special conditions to be attached to any subsequent development permit: (including continued if attached)

Activity shall not commence until all required permits are issued and approvals are granted.



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300  
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

April 22, 2011

Mr. Bob Nacht  
City of Chehalis  
Community Development Department  
1321 South Market Boulevard  
Chehalis, WA 98532



Your address  
is in the  
**Upper  
Chehalis**  
watershed

Dear Mr. Nacht:

Thank you for the opportunity to comment on the determination of nonsignificance for the Chehalis 2011 Water Comprehensive Plan proposal (File #SEPA-11-214) as proposed by Dave Vasilauskas, City of Chehalis. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

**SHORELANDS & ENVIRONMENTAL ASSISTANCE: Alex Callender (360) 407-6167**

The checklist indicates future water infrastructure may impact wetlands. Now would be the time to consider future impacts and opportunities for advance mitigation. The proposals must be consistent with the Shoreline Management Act (SMA) and the local Shoreline Master Program (SMP).

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology  
Southwest Regional Office

(SM:11-1614)

cc: Alex Callender, SEA  
Dave Vasilauskas, City of Chehalis (Applicant)

## Cody, Sandy

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**To:** Hansen, Jeffrey  
**Subject:** RE: SEPA No. 11-1614 - Chehalis 2011 Water Comprehensive Plan proposal - Comment Letter

**AMServiceURLStr:** <https://Slingshot.hdrinc.com/CFSS/control?view=services/FTService>

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**From:** Bob Nacht  
**Sent:** Friday, April 22, 2011 10:33 AM  
**To:** Herta Fairbanks; Dave Vasilauskas  
**Subject:** FW: SEPA No. 11-1614 - Chehalis 2011 Water Comprehensive Plan proposal - Comment Letter  
**Importance:** High

[This won't affect the original DNS. I will remark that the wetland mitigation bank that we are pursuing will be available for this purpose.](#)

[Bob](#)

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**From:** Mendoza, Sonia (ECY) [\[mailto:Smen461@ECY.WA.GOV\]](mailto:Smen461@ECY.WA.GOV)  
**Sent:** Friday, April 22, 2011 9:57 AM  
**To:** Bob Nacht  
**Subject:** FW: SEPA No. 11-1614 - Chehalis 2011 Water Comprehensive Plan proposal - Comment Letter  
**Importance:** High

[Mr. Nacht,](#)  
[I accidentally typed in your email wrong. Please see message below.](#)

*Sonia Mendoza*

Department of Ecology-SWRO  
SEPA Coordinator  
360-407-6313 (P)  
360-407-6305(F)

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**From:** Mendoza, Sonia (ECY)  
**Sent:** Friday, April 22, 2011 9:52 AM  
**To:** 'bnacht@ci.chehalis.wa.us'  
**Cc:** 'dvasilauskas@ci.chehalis.wa.us'; Callender, Alexander (ECY)  
**Subject:** SEPA No. 11-1614 - Chehalis 2011 Water Comprehensive Plan proposal - Comment Letter  
**Importance:** High

Mr. Nacht,  
Attached are Ecology's comments for the Chehalis 2011 Water Comprehensive Plan proposal (Ecology SEPA No. 11-1614). Comments are due 4/25/11.

**Please reply to this message for confirmation. Thank you.**



*Sonia Mendoza* 

Department of Ecology-SWRO

SEPA Coordinator

360-407-6313 (P)

360-407-6305(F)

## Purpose of Checklist:

The State Environmental Policy Act (SEPA, Chapter 43.21C RCW) requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required. Following is the SEPA Checklist prepared for the City of Chehalis 2011 Water Comprehensive Plan.

### A. BACKGROUND

1. *Name of proposed project, if applicable:*

City of Chehalis 2011 Water Comprehensive Plan (Plan)

2. *Name of applicant:*

City of Chehalis

3. *Address and phone number of applicant and contact person:*

City of Chehalis  
2007 NE Kresky  
Chehalis, WA 98532

Contact person:  
Mr. Dave Vasiluskas  
(360) 748-0238

4. *Date checklist prepared:*

March 18, 2011

5. *Agency requesting checklist:*

Washington State Department of Health (DOH)

6. *Proposed timing or schedule (including phasing, if applicable):*

Plan includes a schedule of activities for 2011 through 2029. Plan is scheduled to be updated every six years.

7. *Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal?*

Yes. Recommendations in the Plan include improvements and additions to the treatment, transmission and distribution systems, new storage reservoirs, upgrades to booster pumps, and other miscellaneous improvements. Plan is scheduled to be updated every six years.

8. *List any environmental information you know about that has been prepared, or will be prepared, directly relating to this proposal.*

The following plans have been produced for the area served by the City of Chehalis: Lewis County Comprehensive Plan (updated 2009) and the City of Chehalis Comprehensive Plan (updated 2011).

9. *Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.*

Any zoning and planning changes affecting the existing service area will affect this Plan.

10. *List any governmental approvals or permits that will be needed for your proposal, if known.*

Review and approval is required by the Washington State Department of Health. Adoption by City Council is also required.

11. *Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)*

Water Comprehensive Plan for the City of Chehalis, which serves approximately 7,200 persons from two surface water supplies. Plan was developed to meet the requirements of WAC 246-290 and provide comprehensive planning to meet the future water supply requirements for the service area served by the City of Chehalis.

12. *Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.*

Chehalis is located in Lewis County, Washington. The City of Chehalis water service area is coincident with the City's Urban Growth Area (UGA), as shown on Figure 2.2 in the Water Comprehensive Plan, with the exception of approximately 230 additional customers located outside of the UGA along Jackson Highway and North Fork Road.

## **B. ENVIRONMENTAL ELEMENTS**

### **1. EARTH:**

#### **a. *General description of the site.***

Areas include varied terrain.

#### **b. *What is the steepest slope on the site (approximate percent slope)?***

Unknown, slope of area varies.

#### **c. *What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.***

Water Comprehensive Plan includes a large area, which includes all of the listed soil types.

#### **d. *Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.***

Soils in the vicinity of specific construction projects will be evaluated during the design of each project.

#### **e. *Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.***

Requirements for filling and grading will be evaluated during the design of specific construction projects.

#### **f. *Could erosion occur as a result of clearing, construction, or use? If so, generally describe.***

Proper construction practices should minimize erosion.

#### **g. *About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?***

Cannot be evaluated until new facilities are designed.

#### **h. *Proposed measures to reduce or control erosion, or other impacts to the earth, if any:***

Proper construction practices will minimize runoff from the site and restore disturbed areas as quickly as possible to prevent erosion.

2. AIR:

- a. *What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.*

Typical emissions from construction and construction equipment during construction of new facilities.

- b. *Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.*

No off-site sources of emissions are known.

- c. *Proposed measures to reduce or control emissions or other impacts to air, if any:*

Proper mufflers and air emissions control equipment devices will be maintained on equipment. Disturbed areas will be wetted to control dust.

3. WATER:

a. *Surface:*

- 1) *Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.*

There are small creeks and wet areas within the water service area, along with the Chehalis and Newaukum Rivers.

- 2) *Will the project require any work over, in, adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.*

Future projects may include work near or crossing surface water bodies. Construction descriptions and plans are not available at this time.

- 3) *Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.*

Information is not available at this time.

- 4) *Will the proposal require surface water withdrawals or diversions? Give general descriptions, purpose, and approximate quantities if known.*

Information is not available at this time.

- 5) *Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.*

Exact location of all future work is unknown. Mitigation measures from any work that may occur within a floodplain will be addressed during the design of that work.

- 6) *Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.*

None are anticipated.

*b. Ground:*

- 1) *Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.*

No discharges to the groundwater are anticipated.

Some dewatering may be necessary during construction. Construction dewatering will be addressed during design of each specific project.

- 2) *Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals: agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.*

No discharges into the ground are anticipated.

*c. Water Runoff (including storm water):*

- 1) *Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.*

Storm water will be diverted around construction sites. Storm water drainage will be considered during the design of new facilities.

- 2) *Could waste materials enter into ground or surface waters? If so, generally describe.*

Proper construction practices will prevent waste materials from entering ground or surface waters.

- d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Anticipated measures include diversion of storm water around construction sites, proper dewatering practices, and consideration of storm water drainage during design of new facilities. Watershed control measures are addressed in this Plan as well.

4. PLANTS:

- a. *Check or circle types of vegetation found on the site:*

- deciduous tree: alder, maple, aspen, other
- evergreen tree: fir, cedar, pine, other
- shrubs
- grass
- pasture
- crop or grain: orchards, hops
- wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
- water plants: water lily, eelgrass, milfoil, other

- b. *What kind and amount of vegetation will be removed or altered?*

Specific types of vegetation removed during future work is unknown.

- c. *List threatened or endangered species known to be on or near the site.*

Not researched. Such evaluation will be done for specific projects.

- d. *Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:*

Landscaping and replacement of vegetation will be considered during the design of future projects.

5. ANIMALS:

- a. *Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:*

A survey of birds and animals in the service area was not performed. Several of the birds and animals listed may exist in the service area.

birds: hawk, heron, eagle, songbirds

mammals: deer, elk, beaver



other: rodents, squirrels, chipmunks, skunk, coyote  
fish: bass, salmon, trout, herring, shellfish  
other:

- b. *List any threatened or endangered species known to be on or near the site.*

Not researched. Such evaluation will be done for specific projects.

- c. *Is the site part of a migration route? If so, explain.*

Not researched. Such evaluation will be done for specific projects.

- d. *Proposed measures to preserve or enhance wildlife, if any:*

Exact location of future work and wildlife mitigation measures will be addressed during design.

## 6. ENERGY AND NATURAL RESOURCES:

- a. *What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.*

Electricity will be used for heating, lighting, pumping, and telemetry. Gasoline and diesel fuel will be used for construction equipment and generators

- b. *Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.*

Generally, no; however, proposed storage reservoirs will block some sun, affecting adjacent properties.

- c. *What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:*

Energy efficient pumps and equipment should be used wherever possible.

## 7. ENVIRONMENTAL HEALTH:

- a. *Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.*

Proper safety precautions will be taken when buried utilities are encountered during trenching operations. No other hazards are known.

- 1) *Describe special emergency services that might be required.*

None are anticipated.

- 2) *Proposed measures to reduce or control environmental health hazards, if any:*

Source protection measures are being implemented to protect water sources. No other measures are anticipated.

*b. Noise*

- 1) *What types of noise exist in the area which may affect your project (for example, traffic, equipment, operation, other)?*

None.

- 2) *What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.*

Short-term noise during construction from construction activities and long-term background noise from pumps at wells and booster stations.

Construction noise will occur primarily during normal business hours and background pump noise will occur as dictated by water demand. Background pump noise will be within allowable standards.

- 3) *Proposed measures to reduce or control noise impacts, if any:*

Source pumps are installed inside of a pump house. Booster pumps will be installed inside of a pump house or in a vault. Proper mufflers will be used on all construction equipment.

**8. LAND AND SHORELINE USE:**

- a. What is the current use of the site and adjacent properties?*

Plan affects many areas with various uses ranging from undeveloped to residential, commercial, and industrial.

- b. Has the site been used for agriculture? If so, describe.*

No.

c. *Describe any structures on the site.*

The service area is large and contains many residential, recreational, commercial, and industrial structures.

d. *Will any structures be demolished? If so, what?*

No.

e. *What is the current zoning classification of the site?*

Residential, commercial, industrial, and institutional zonings exist throughout the planning area.

f. *What is the current comprehensive plan designation of the site?*

Service area includes several comprehensive plan designations, similar to the above-mentioned zoning classifications.

g. *If applicable, what is the current shoreline master program designation of the site?*

Will be evaluated on a project specific basis.

h. *Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.*

None known.

i. *Approximately how many people would reside or work in the completed project?*

Estimated population of the service area in 2010 was approximately 7,200.

j. *Approximately how many people would the completed project displace?*

No displacement anticipated.

k. *Proposed measures to avoid or reduce displacement impacts, if any:*

Does not apply.

l. *Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:*

Water demand projections in this Plan were calculated using existing and projected populations. Land uses in this Plan are consistent with the Growth Management Act, the Lewis County Comprehensive Plan, the City of Chehalis Comprehensive Plan, and the existing land use within the water system's service area.

9. HOUSING:

- a. *Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.*

Does not apply.

- b. *Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.*

Does not apply.

- c. *Proposed measures to reduce or control housing impacts, if any:*

Does not apply.

10. AESTHETICS:

- a. *What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?*

The tallest proposed structure is likely to be new water reservoirs that could be as much as 100 feet high. Final site selection and acquisition will determine the height of the reservoirs. Exterior building material will be selected during design.

- b. *What views in the immediate vicinity would be altered or obstructed?*

Depends on location of the reservoirs. Views from individual sites could be affected by location selected for reservoirs.

- c. *Proposed measures to reduce or control aesthetic impacts, if any:*

Aesthetic impacts, exterior of reservoirs, and landscaping will all be considered during design of future facilities.

11. LIGHT AND GLARE:

- a. *What type of light or glare will the proposal produce? What time of day would it mainly occur?*

Unknown at this time.

- b. *Could light or glare from the finished project be a safety hazard or interfere with views?*

Unknown at this time. Light or glare that is a safety hazard or interferes with views is not anticipated.

- c. *What existing off-site sources of light or glare may affect your proposal?*

Does not apply.

- d. *Proposed measures to reduce or control light and glare impacts, if any:*

Impacts from light and glare will be considered during design of future facilities.

12. RECREATION:

- a. *What designated and informal recreational opportunities are in the immediate vicinity?*

Many parks and recreational facilities exist in the service area.

- b. *Would the proposed project displace any existing recreational uses? If so, describe.*

Unknown at this time.

- c. *Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:*

Mitigation of impacts on recreation will be considered during design of future facilities.

13. HISTORIC AND CULTURAL PRESERVATION:

- a. *Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.*

Some sites selected for future projects may be near historic or cultural sites.

- b. *Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.*

Unknown at this time.

- c. *Proposed measures to reduce or control impacts, if any:*

Mitigation of impacts on historic and cultural sites will be considered during design of future facilities.

14. TRANSPORTATION:

- a. *Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.*

Major public streets and highways are shown on figures in the Plan.

- b. *Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?*

Public transportation serves some of the service area.

- c. *How many parking spaces would the completed project have? How many would the project eliminate?*

Does not apply.

- d. *Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).*

Private access to reservoir sites may be required. New or replacement water lines in existing streets will require repair of the streets.

- e. *Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.*

Unknown at this time.

- f. *How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.*

A significant increase in vehicular trips is not anticipated. Visits to intake sites, pump stations, and reservoir sites for inspection and maintenance will be necessary. Vehicular traffic will increase temporarily during construction when construction workers drive to and from the construction site.

- g. *Proposed measures to reduce or control transportation impacts, if any:*

None are anticipated.

15. PUBLIC SERVICES:

- a. *Would the project result in an increased need for public services (for example, fire protection, police protection, health care, schools, other)? If so, generally describe.*

Water services will be provided as dictated by need. Water service by itself will not cause the need for public services to increase.

- b. *Proposed measures to reduce or control direct impacts on public services, if any.*

Growth within the service area will be determined by zoning, land use, and needs or restrictions. Water services will be provided based on need. Recommendations

in the Plan are made to improve water service and fire protection in the service area.

16. UTILITIES:

- a. *Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.*

Depends upon location of future facilities.

- b. *Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.*

Plan describes water supply, storage, transmission, and distribution facilities needed to serve existing and projected service areas. The City provides water service. Construction activities will depend on the facility and site.

**C. SIGNATURE**

The above answers are true and complete to the best of my knowledge.  
I understand that the lead agency is relying on them to make its decision.

Signature: 

Date Submitted: 3/25/2011



## Supplemental Sheet for Nonproject Actions

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster than if the proposal were not implemented. Respond briefly and in general terms.

1. *How would the proposal be likely to increase the discharge to water, emission to air, production, storage, or release of toxic or hazardous substances; or production of noise?*

Water service alone does not cause any of the mentioned situations. Some minor temporary impacts may occur during construction.

*Proposed measures to avoid or reduce such increases are:*

Proper construction practices will avoid or reduce temporary impacts.

2. *How would the proposal be likely to affect plants, animals, fish, or marine life?*

Recommendations proposed in this Plan are not anticipated to affect plants, animals, fish, or marine life. Measures for protection or conservation should be considered during design.

*Proposed measures to protect or conserve plants, animals, fish, or marine life are:*

Design decisions and construction procedures should follow all proper procedures and practices to minimize impacts on plants, animals, fish, and marine life.

3. *How would the proposal be likely to deplete energy or natural resources?*

Energy will be used to construct new facilities and operate equipment after facilities are constructed. Proposed measures to protect and conserve energy and natural resources are: Appropriate reviews, approvals, and permits will be obtained before planned construction projects. The Plan includes a water conservation plan identifying activities to be performed by the City. Energy-efficient equipment should be considered whenever possible.

There will be an increase in surface water withdrawal corresponding to growth projections outlined in this Plan.

4. *How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?*

No effects are anticipated.

*Proposed measures to protect such resources or to avoid or reduce impacts are:*

All regulations concerning sensitive or protected areas will be followed.

5. *How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?*

The Plan is compatible with all existing and proposed land use plans.

*Proposed measures to avoid or reduce shoreline and land use impacts are:*

Does not apply.

6. *How would the proposal be likely to increase demands on public transportation or public services and utilities?*

The Plan proposes to respond to a projected increase in needs for water service resulting from projected population growth in the service area. Increase in demands on public services and utilities resulting from growth will be determined by zoning, land use, and restrictions or needs. Water service in itself will not increase the demand for public services.

*Proposed measures to reduce or respond to such demands are:*

Source enhancement, storage construction, and transmission and distribution improvements.

7. *Identify, if possible, whether the proposal may conflict with local, State, or Federal laws or requirements for the protection of the environment.*

The Plan is consistent with good management practices for water resources and does not conflict with current laws and regulations. The Plan conforms with all laws and requirements for the protection of the environment.

**Appendix B**  
**Water Facilities Inventory**



# WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1  
 Updated: 12/18/2009  
 Printed: 2/7/2011

WFI Printed For: On-Demand  
 Submission Reason: Other

RETURN TO: Southwest Regional Office, PO Box 47823, Olympia, WA, 98504

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
12250 P	CHEHALIS WATER DEPARTMENT	LEWIS	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS	7. OWNER NAME & MAILING ADDRESS	8. Owner Number 001002
DAVID J. VASILAIUSKAS [CERT OPERATOR] 2007 NE KRESKY AVE CHEHALIS, WA 98532	CHEHALIS, CITY OF 2007 NE KRESKY AVE CHEHALIS, WA 98532	TITLE:P/W DIRECTOR
STREET ADDRESS IF DIFFERENT FROM ABOVE	STREET ADDRESS IF DIFFERENT FROM	
ATTN ADDRESS CITY STATE ZIP	ATTN ADDRESS CITY STATE ZIP	

9. 24 HOUR PRIMARY CONTACT INFORMATION	10. OWNER CONTACT INFORMATION
Primary Contact Daytime Phone: (360) 748-0238	Owner Daytime Phone: (360) 748-0238
Primary Contact Mobile/Cell Phone: (360) 269-0953	Owner Mobile/Cell Phone: (360) 880-2620
Primary Contact Evening Phone: (xxx) xxx-xxxx	Owner Evening Phone: (xxx) xxx-xxxx
Fax:   E-mail: dvasilaukas@ci.chehalis.wa.us	Owner Fax Phone:   E-mail: tgrochowski@ci.chehalis.wa.us

**WAC 246-290-420(9) requires that water systems provide 24-hour contact information for emergencies.**

11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)	
<input checked="" type="checkbox"/> Not applicable (Skip to #12)	
<input type="checkbox"/> Owned and Managed	SMA NAME: _____ SMA Number: _____
<input type="checkbox"/> Managed Only	
<input type="checkbox"/> Owned Only	

12. WATER SYSTEM CHARACTERISTICS (mark all that apply)		
<input type="checkbox"/> Agricultural	<input checked="" type="checkbox"/> Hospital/Clinic	<input checked="" type="checkbox"/> Residential
<input checked="" type="checkbox"/> Commercial / Business	<input checked="" type="checkbox"/> Industrial	<input checked="" type="checkbox"/> School
<input checked="" type="checkbox"/> Day Care	<input checked="" type="checkbox"/> Licensed Residential Facility	<input type="checkbox"/> Temporary Farm Worker
<input checked="" type="checkbox"/> Food Service/Food Permit	<input checked="" type="checkbox"/> Lodging	<input checked="" type="checkbox"/> Other (church, fire station, etc.): _____
<input checked="" type="checkbox"/> 1,000 or more person event for 2 or more days per year	<input checked="" type="checkbox"/> Recreational / RV Park	

13. WATER SYSTEM OWNERSHIP (mark only one)	14. STORAGE CAPACITY (gallons)
<input type="checkbox"/> Association <input type="checkbox"/> County <input type="checkbox"/> Investor <input type="checkbox"/> Special District <input checked="" type="checkbox"/> City / Town <input type="checkbox"/> Federal <input type="checkbox"/> Private <input type="checkbox"/> State	6,734,000

15 Source Number	16 SOURCE NAME  LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER.  Example: WELL #1 XYZ456  IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SFATTLE	17 INTERTIE  INTERTIE SYSTEM ID NUMBER	18 SOURCE CATEGORY										19 USE	20	21 TREATMENT					22 DEPTH	23 CAPACITY (GALLONS PER MINUTE)	24 SOURCE LOCATION					
			WELL	WELL FIELD	WELL IN A WELL	SPRING	SPRING IN	SEA WATER	RANNEY / INF.	SURFACE WATER	OTHER	PERMANENT			SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION			FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN INTERVAL IN FEET	1/4, 1/4 SECTION
S01	N.FORK-NEWAUKUM RIV.											X			X		X	X	X	X	X		2300	SW SE	20	14N	01E
S02	CHEHALIS RIVER											X			X		X	X	X	X		3500	NE SW	31	14N	02	

# WATER FACILITIES INVENTORY (WFI) FORM - Continued

<b>1. SYSTEM ID</b> 12250 P	<b>2. SYSTEM NAME</b> CHEHALIS WATER DEPARTMENT	<b>3. COUNTY</b> LEWIS	<b>4. GROUP</b> A	<b>5. TYPE</b> Comm
--------------------------------	--	---------------------------	----------------------	------------------------

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
<b>25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)</b>	0	3552	Unspecified
A. Full Time Single Family Residences (Occupied 180 days or more per year)	2792		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
<b>26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)</b>			
A. Apartment Buildings, condos, duplexes, barracks, dorms	42		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	760		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
<b>27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)</b>			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	6	6	
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	826	826	
<b>28. TOTAL SERVICE CONNECTIONS</b>		4384	

<b>29. FULL-TIME RESIDENTIAL POPULATION</b>	
A. How many residents are served by this system 180 or more days per	7185

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?	5000	5000	5000	10000	22000	23000	25000	24000	7000	4000	4000	4000
B. How many days per month is water accessible to the public?	31	28	31	30	31	30	31	31	30	31	30	31

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students daycare children and/or employees are present each month?	2791	2791	2791	2791	2791	2791	200	200	2791	2791	2791	2791
B. How many days per month are they present?	21	20	22	19	22	11	3	2	21	22	19	16

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	10	10	10	10	10	10	9	9	10	10	10	10

**35. Reason for Submitting WFI:**

Update - Change  
  Update - No Change  
  Inactivate  
  Re-Activate  
  Name Change  
  New System  
  Other \_\_\_\_\_

**36. I certify that the information stated on this WFI form is correct to the best of my knowledge.**

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

PRINT NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

<u>WS ID</u>	<u>WS Name</u>
12250	CHEHALIS WATER DEPARTMENT

**Total WFI Printed: 1**

**Appendix C**  
**City of Centralia Water Intertie Agreement**



**AGREEMENT FOR WATER SYSTEM INTERTIE**

**THIS AGREEMENT**, made and entered into this 25<sup>th</sup> day of January, 1999, by and between the **CITY OF CHEHALIS, WASHINGTON AND THE CITY OF CENTRALIA, WASHINGTON**, hereby agree as follows:

For purposes of this Agreement, the City of Centralia and/or the Centralia water system shall be referred to as "Centralia;" the City of Chehalis and/or the Chehalis water system, shall be referred to as "Chehalis;" and the water system intertie between and connecting the Centralia and Chehalis water systems shall be referred to as "intertie."

**SECTION 1. PURPOSE.** The purpose of the intertie shall be to provide or supplement water supplies to either city's water distribution system in the event of a failure of source, transmission line, distribution system line(s) treatment facilities, or other major emergency or disaster. Such emergency water service provided by the intertie is intended for short-term emergency contingency supply purposes. The intertie is not capable of, or intended to provide base or peak supply quantities .

**SECTION 2. OPERATION AND MAINTENANCE.** The operation and maintenance responsibilities and procedures for the intertie shall be as follows:

A. Chehalis shall operate, maintain, control and own the 12-inch waterline valve located eleven (11) feet south of the south right-of-way line of Scott Johnson Road and fifteen (15) feet more or less east of the westerly line of the Kresky Avenue right-of-way, hereinafter referred to as the "Chehalis valve," and all piping, appurtenant fittings and assemblies southerly of said valve.

B. Centralia shall operate, maintain, control and own the 12-inch waterline valve located thirty-two (32) feet north of the south right-of-way line of Scott Johnson Road and eighteen (18) feet more or less east of the westerly line of the Kresky Avenue right-of-way, hereinafter referred to as the "Centralia valve," and all piping, appurtenant fittings and assemblies northerly of said valve.

C. Chehalis and Centralia shall jointly operate, maintain, control and own the section of waterline, all appurtenant fittings and assemblies located between the Chehalis valve and the Centralia valve.

D. Operation of the intertie will be under the sole control of Centralia and Chehalis. The intertie shall not be utilized by either party without the specific prior notification and approval of both cities. After such approval has been provided, the two cities shall cooperatively activate the intertie. It shall be the responsibility of each city to operate valves in their distribution system to accommodate the pressure difference of the host supplier.

E. If the system for which water supply is requested is or becomes unable to provide water, the intertie shall be shut off/disconnected and all water transfer ceased.

F. The two cities shall monitor water quality at the intertie and shall continue to be responsible for water quality monitoring within their respective systems.

**SECTION 3. COSTS FOR SUPPLIED WATER.** To the extent possible, each city shall monitor and track water quantities transferred and received, and, based upon this information, the city that supplies such water shall determine or estimate charges based on that city's current water rates calculated and/or estimated rate charges and other costs associated with the transfer of water shall be billed to the receiving city. Although the intertie does not currently have metering devices, they may be added in the future.

**SECTION 4. ADMINISTRATION.**

A. Revision of this Agreement may be periodically deemed appropriate. Any subsequent intertie agreement signed by both cities shall nullify this Agreement.

B. This Agreement is to be mutually beneficial and perpetual. In the event that this Agreement should cease to be of benefit, it may be dissolved by mutual consent or by either party after thirty (30) days of the date the other party received written notice of intent to terminate this Agreement.

C. Emergency service is not intended to provide water for extended periods or at frequent intervals. Approval of repeated requests for water through the intertie within a short interval will be at the discretion of the providing city.

D. The City of Chehalis Public Works Director and the City of Centralia Utilities Director shall jointly administer this Agreement.

**EXECUTED IN DUPLICATE** on the date and year first above written.

**CITY OF CHEHALIS, WASHINGTON**

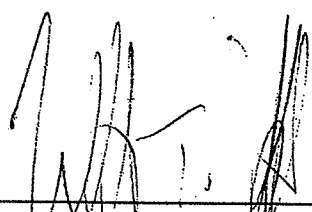
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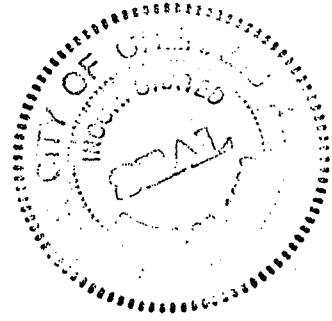
  
\_\_\_\_\_  
Its Mayor

Attested by

  
\_\_\_\_\_  
Its City Clerk

Approved as to  
form and content by

  
Its City Attorney




CITY OF CENTRALIA, WASHINGTON

By

  
Its Mayor

Attested by

  
Its City Clerk

Approved as to  
form and content by

  
Its City Attorney

**Appendix D**  
**City of Chehalis Ordinances 865-B and 866-B**

**ORDINANCE NO. 865-B**

**AN ORDINANCE OF THE CITY OF CHEHALIS, WASHINGTON, PROVIDING FOR AND ESTABLISHING CHARGES, RATES, AND FEES FOR INSTALLATIONS AND CONNECTIONS TO THE WATER SYSTEM OF THE CITY OF CHEHALIS, AND THE PROVIDING OF WATER SERVICES; ESTABLISHING A LOW-INCOME SENIOR CITIZEN CUSTOMER AND TOTALLY DISABLED CUSTOMER WATER DISCOUNT RATE; REPEALING ORDINANCE NO. 697-B, PASSED THE 13<sup>TH</sup> DAY OF AUGUST, 2001; ORDINANCE NO. 751-B, PASSED THE 14<sup>TH</sup> DAY OF JULY, 2003; ORDINANCE NO. 771-B, PASSED THE 27<sup>TH</sup> DAY OF SEPTEMBER, 2004; AND ORDINANCE NO. 772-B, PASSED THE 27<sup>TH</sup> DAY OF SEPTEMBER, 2004, CODIFIED IN THE CHEHALIS MUNICIPAL CODE AS CHAPTER 13.12; AND ESTABLISHING THE EFFECTIVE DATE HEREOF.**

**THE CITY COUNCIL OF THE CITY OF CHEHALIS, WASHINGTON, DO ORDAIN AS FOLLOWS:**

**13.12.010 Definitions.**

The following words or phrases shall have the meanings set forth for the purposes of this ordinance:

“Connection” means any physical connection to the city water system by any water service or any private water system, or any pipeline extension.

“Cost” means the cost of labor, material, transportation, supervision, engineering, and all other necessary overhead expenses.

“Customer” means any person, firm, or corporation obtaining or using water service from the water system of the city.

“Equivalent residential unit (ERU)” means or refers to a unit of water capacity determined by the city to be equivalent to the capacity (or average capacity) typically used by, or allocated to, a single-family residential dwelling unit. For the purposes of this ordinance an ERU of water capacity shall be equal to 300 gallons per day of water use as determined through the standard water billing process.

“Income” means gross income as defined in Section 61(a) of the Internal Revenue Code of 1954, as now in effect or hereafter amended, plus any and all Social Security retirement and/or disability payments, Veterans Administration retirement and/or disability payments, Railroad Retirement Board pension and/or disability payments, and payment received from any other public or private pension, retirement, profit sharing and disability plans, unemployment compensation, and income from any other source.

“Low-income senior citizen customer” means a person who is 62 years of age or older and whose total income, including that of his or her spouse or co-tenant, does not exceed the sum of the existing State of Washington Department of Community, Trade and Economic Development low household income figure for community development block grant (CDBG) projects.

“Totally disabled customer” means any person who has been classified as totally disabled by the Social Security Administration and whose total income does not exceed the amount provided for low-income senior citizen customers.

**13.12.020 Costs of installation.**

A. The costs of installation to the city water system shall be as follows:

<u>Service Size</u>	<u>Meter Size</u>	<u>Cost</u>
3/4"	5/8" x 3/4"	\$ 700.00
1"	1"	1,000.00
1- 1 1/2"	1- 1 1/2"	1,500.00
2"	2"	2,000.00

B. These costs shall include meters where open cutting or conventional boring methods and direct burial of the service lines are not permitted. Where special conditions exist or special approvals and permit fees are required, all costs and fees associated with such restrictions, and any special conditions, shall be added to the above installation costs.

C. Where it is necessary to open cut paved roadway or to cross under a sidewalk and/or improved area between the curb and the property line to install the service, the customer shall also be charged the costs necessary to restore the disturbed roadway, sidewalk, or improved area to its original condition or better condition. Such costs for restoration shall include time and materials plus overhead charges.

D. For water service larger than two inches, the costs of the installation will be based on the actual cost for materials, labor, and equipment, plus overhead charges. The customer requesting a service larger than two inches shall pay a deposit in an amount of the public works director's estimate of the cost for construction work and the work shall thereafter be billed on the basis of actual cost difference from the estimated cost, including overhead.

**13.12.030 Customer deposit.**

A. A deposit in the sum of \$200.00 shall be paid by each residential water customer for accounts to serve premises that are occupied or used by the property owner and billed to the property owner. A deposit of \$200.00 shall be paid by each commercial water customer and each residential water customer for accounts to serve premises that are to be occupied by residential customers other than the owner of said premises at the time of application for a service connection or a service account. The deposit shall be retained by the finance manager in a separate account designated "customer deposit account." The deposit paid by each customer shall be refunded to the person paying the deposit at the time their account is closed out, provided there shall be deducted from the deposit any amount due the city for water, sewer or storm drain service rates and charges, including delinquency charges.

B. Any deposit not refunded to the customer or applied on the water, sewer or storm drain account of such customer when the account is closed out shall be held by the finance manager for a period of one year after the account is closed out. If demand is not made upon the finance manager for refund of the deposit by the customer paying the same within the period of one year after the account is closed out, the amount of the deposit remaining shall be deemed to be unclaimed property and shall pass to the State of Washington Department of Revenue, in accordance with the mandates of the Uniform Unclaimed Property Act of 1983, as it now exists or is hereafter amended.

**13.12.040 Water service connection fees.**

A. A water connection fee shall be imposed for connections to the water system of the city, which water connection fee shall be paid for each ERU at the current rate of \$2071.00 per ERU. Rates are subject to change upon approval of City Council.

B. The number of ERUs used to determine the charges for water connection fees shall be based on actual water usage, if such usage history is available. If no water usage history or information is available, the number of ERUs used to determine the charges for water connection fees shall be based on the estimated usage, as determined by the public works director.

C. In the cases where estimates of water usage are used to determine the number of ERUs and charges for water connection fees, water usage may be reviewed after the connection is in use for the period of one year. If, after an evaluation has been made, the actual determined number of ERUs is greater than the estimated number of ERUs, an additional charge for water connection shall be required and levied against the owner or person responsible for the connection. If any such additional charges are not paid, the water service shall be subject to disconnection. If, after an evaluation has been made, the actual determined number of ERUs is less than the estimated number of ERUs, a reimbursement equal to the difference in charges for the estimated number of ERUs and charges for the actual number of ERUs shall be made to the owner or person responsible for the connection.

**13.12.050 Standby fire protection service capital facilities charges.**

Capital facilities charges for connections to the city water system for the purpose of providing standby fire protection service shall be as follows:

<u>Service Size</u>	<u>Connection Fee</u>
2"	\$ 1,610
3"	3,210
4"	5,020
6"	10,040
8"	16,060
10"	23,090
12"	45,170

**13.12.060 Service call charges.**

A. Service calls, as defined by city ordinance, involving extraordinary and unusual time demands shall be charged to the customer requesting the service call at the cost of labor of each employee involved, including travel time, for service calls made during the hours of 8:00 a.m. to 4 p.m., Monday through Friday, except holidays. The minimum charge for such service call shall be \$25.00.

B. Service calls made on Saturdays, Sundays, holidays, or during the hours of 4 p.m. to 8 a.m., Monday through Friday, shall be charged to the customer requesting the service call at the cost of labor of each employee involved, including travel time. The minimum charge for such service call shall be \$75.00.

**13.12.070 Cost for testing meters.**

A. Any person requesting a test of any water meter as provided by city ordinance, shall, at the time of request, deposit with the finance manager the amount to be charged for such test as follows:

<u>Meter Size</u>	<u>Deposit</u>
5/8" x 3/4"	\$ 40.00
1"	50.00
1 - 1/2"	80.00



2"	100.00
3"	150.00
4"	200.00
6"	300.00
8"	400.00

B. Meters two inches and smaller in size shall be tested at the public works department. Meters larger than two inches shall be tested in the field. After the deposit has been made and the test has been scheduled, the customer shall be notified of the date and time that the meter test is scheduled to take place. The customer shall have the option of being present when such test is made. In the event the test discloses an error of more than three percent of water consumed in favor of the city, the deposit and any service charges shall be refunded to the customer, the meter shall be corrected or an accurate meter shall be installed, and the customer's account shall be credited with the amount charged for the excess consumption on the three previous readings. When the test discloses an error of three percent or less, the amount deposited shall be retained by the city to cover the costs of such test.

**13.12.080 Rate of use of fire protection facilities for other purposes.**

A. Whenever water is used from fire protection facilities or equipment for other purposes or fire protection water is misused, such usage shall be charged to the user at the rate of \$2.50 per 100 cubic feet.

B. Prior approval must be obtained before any person shall use water from fire protection facilities for other than their intended purpose. Any such person not obtaining prior approval shall be fined a penalty of \$100.00, in addition to the usage charge listed above.

**13.12.090 Charge for fire protection.**

The monthly charge for fire protection service shall be as follows:

<u>Water Meter Service Size</u>	<u>Inside City Limits</u>	<u>Outside City Limits</u>
2"	\$ 5.82	\$ 6.40
3"	11.26	12.39
4"	31.23	34.36
6"	92.95	102.25
8"	183.71	202.09
10"	292.63	321.89
12"	419.70	461.67

**13.12.100 Delinquency charge.**

A delinquency charge equal to 10 percent of the total water service charge shall be added to each unpaid bill.

**13.12.110 Water rates inside of the city limits.**

The water rates to be charged for water usage for customers inside the city limits shall be as follows:

A. Residential Fixed Rate:

<b>Size of Water Meter Service</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
5/8" x 3/4"	\$ 12.54	\$ 13.30	\$ 14.10
1"	17.99	19.07	20.23
1½" and 2"	37.96	40.25	42.68

<b>Size of Water Meter Service</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
5/8" x 3/4"	\$ 14.95	\$ 15.86	\$ 17.32
1"	21.45	22.74	24.84
1½" and 2"	45.25	47.98	52.42

**B. Commercial Fixed Rate:**

<b>Size of Water Service</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
5/8" x 3/4"	\$ 14.05	\$ 14.90	\$ 15.80
1"	20.12	21.34	22.63
1½" and 2"	42.39	44.95	47.66
3" and 4"	111.20	117.91	125.03
6"	212.39	225.21	238.81
8"	333.82	353.97	375.34

<b>Size of Water Service</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
5/8" x 3/4"	\$ 16.76	\$ 17.77	\$ 19.41
1"	23.99	25.44	27.79
1½" and 2"	50.54	53.59	58.54
3" and 4"	132.58	140.58	153.57
6"	253.22	268.50	292.32
8"	398.00	422.02	461.02

**C. Consumption:**

<u>Year</u>	<u>Amount Per Unit of 100 Cubic Feet</u>
2005	\$1.86
2006	1.97
2007	2.09
2008	2.22
2009	2.35
2010	2.57

D. Water rates inside the city limits and water rates outside the city limits shall be as stated for the year 2007 and shall remain the same for a period of 12 months from the effective date of Ordinance 826B, codified in this subsection. In all other respects, the terms and conditions of this section shall remain in full force and effect. At the end of the period of time for

which rates are tolled at the 2007 rate, the council shall enact new legislation providing for water rates.

**13.12.120 Water rates outside of the city limits.**

The water rates to be charged for water usage for customers outside the city limits shall be as follows:

A. Residential Fixed Rate:

<b>Size of Water Meter Service</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
5/8" x 3/4"	\$ 13.80	\$ 14.63	\$ 15.51
1"	19.79	20.98	22.25
1 1/2" and 2"	41.75	44.27	46.94

<b>Size of Water Meter Service</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
5/8" x 3/4"	\$ 16.45	\$ 17.44	\$ 19.05
1"	23.59	25.01	27.33
1 1/2" and 2"	49.78	52.78	57.66

B. Commercial Fixed Rate:

<b>Size of Water Meter Service</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
5/8" x 3/4"	\$ 15.46	\$ 16.39	\$ 17.38
1"	22.14	23.47	24.89
1 1/2" and 2"	46.63	49.44	52.42
3" and 4"	122.32	129.70	137.53
6"	233.63	247.73	262.69
8"	367.20	389.37	412.87

<b>Size of Water Meter Service</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
5/8" x 3/4"	\$ 18.43	\$ 19.54	\$ 21.35
1"	26.39	27.99	30.57
1 1/2" and 2"	55.59	58.94	64.39
3" and 4"	145.83	154.63	168.92
6"	278.55	295.35	322.65
8"	437.80	464.22	507.12

C. Consumption:

<b>Year</b>	<b>Amount Per Unit of 100 Cubic Feet</b>
2005	\$2.05
2006	2.17

2007	2.30
2008	2.44
2009	2.59
2010	2.83

D. Water rates inside the city limits and water rates outside the city limits shall be as stated for the year 2007 and shall remain the same for a period of 12 months from the effective date of Ordinance 826B, codified in this subsection. In all other respects, the terms and conditions of this section shall remain in full force and effect. At the end of the period of time for which rates are tolled at the 2007 rate, the council shall enact new legislation providing for water rates.

**13.12.130 Rates for low-income senior citizen customers and low-income totally disabled customers.**

A. The fixed rates for low-income senior citizen residential customers and low-income totally disabled customers shall be one-half (50 percent) of the residential fixed rates that would otherwise apply. All consumption shall be charged as provided in the rate schedule for residential customers inside and outside the city limits, whichever is applicable, as set forth in this chapter.

B. All low-income senior citizen residential customers and low-income totally disabled residential customers applying for low-income senior citizen customer or totally disabled residential customer rates herein provided shall furnish a claim for exemption in such affidavit form as shall be prescribed by the city manager. Such form shall be furnished on or before the thirtieth day of June of each year or within 30 days from the date of account opening or unexpected sudden change of income status. The city will consider applications furnished outside of this period.

C. Those customers applying for the totally disabled customer rate must furnish proof of such disability from the Social Security Administration.

**13.12.150 Overhead charge.**

An overhead charge of 25 percent of the total costs for labor, materials, and equipment for work and services performed or installation of service water lines or other facilities by the city shall be added to the costs charged to the customer. Such overhead charge shall be to accommodate administration, supervision, and accounting costs.

**13.12.160 Water surcharge fees (latecomer fees).**

A. The public works director may, at his discretion, establish and adopt water surcharge fees that, after their establishment, shall be imposed upon water customers connecting to specifically designated water utility extension(s) and/or water system improvements in defined areas.

B. Such surcharge fees shall be based on criteria established within the standard latecomer agreement form created by the development review committee.

C. In order for a water surcharge fee to be established, in addition to or separately from a request to the city council approving and authorizing the installation and/or construction of a water utility extension(s) or water system improvements, the developer, property owner, or other entity that installed and/or constructed such water utility extension(s) or water system improvements, or proposes to install and/or construct water utility extension(s) or water system improvements shall submit to the public works director a specific request (a latecomer agreement form created by the development review committee) to establish a water surcharge fee.

D. The public works director may require additional information from the developer, property owner, or other entity requesting the establishment of such water surcharge fee. The director may also deny the request to establish the water surcharge fee, or establish a different amount of water surcharge fee, other than the fee calculated in the standard latecomer agreement form. If a water surcharge fee is approved, the director may impose other conditions, limitations, and/or duration for said water surcharge fee.

E. The purpose of establishing such water surcharge fees is to reimburse developers, property owners, or other entities, that installed and/or constructed water utility extension(s) or water system improvements, for a portion of their costs for the installation and/or construction of water utility extension(s) or water system improvements, for which subsequent, non-participating future customers benefit. The city shall collect established surcharges, from such non-participating future customers, at the time water capacity charges are paid, and then reimburse the surcharge(s) to the developer, property owner or other entity that installed and/or constructed such water utility extension(s) or water system improvements, for which such surcharge(s) was established.

F. Such water surcharge fees shall be in addition to any other charges that may be applicable.


**13.12.170 Annual review.**

The revenue generated as a result of this ordinance shall be reviewed annually and compared to expectations and sufficiency, with a report to the city council.


**13.12.180 Effective date.**

The effective date of this ordinance shall be the February 22, 2011.

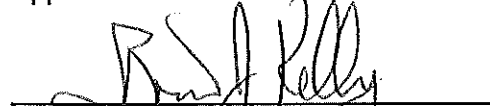
**PASSED** by the city council of the city of Chehalis, Washington, and **APPROVED** by its mayor, at a regularly scheduled open public meeting thereof this 14th day of February, 2011.

  
\_\_\_\_\_  
Mayor

Attest:

  
\_\_\_\_\_  
City Clerk

Approved as to form and content:

  
\_\_\_\_\_  
City Attorney

**ORDINANCE NO. 866-B**

**AN ORDINANCE OF THE CITY OF CHEHALIS, WASHINGTON, PROVIDING FOR THE OPERATION AND REGULATION OF THE PUBLIC WATER SYSTEM OF THE CITY; REGULATING THE CONSTRUCTION, INSTALLATION, USE, AND MAINTENANCE OF PUBLIC AND PRIVATE WATER SERVICE LINES; AUTHORIZING RATES AND CHARGES FOR WATER SERVICE CONNECTIONS; PROVIDING FOR LIENS FOR UNPAID CHARGES AND THE ENFORCEMENT AND FORECLOSURE THEREOF; REPEALING ORDINANCE NO. 695-B, PASSED THE 13<sup>TH</sup> DAY OF AUGUST, 2001; AND ORDINANCE NO. 741-B, PASSED THE 14<sup>TH</sup> DAY OF APRIL, 2003, CODIFIED IN THE CHEHALIS MUNICIPAL CODE AS CHAPTER 13.04; AND ESTABLISHING THE EFFECTIVE DATE HEREOF.**

**THE CITY COUNCIL OF THE CITY OF CHEHALIS, WASHINGTON, DO ORDAIN AS FOLLOWS:**

**13.04.010 Definitions.**

The following words or phrases shall have the meanings set forth for the purposes of this ordinance:

"Agreement" means all agreements for service, installations, meters, and special service made with any person, firm, or corporation, or the authorized agents thereof.

"Applicant" means any person, firm, or corporation applying for water service or any other connection to the city water system.

"CCF" means one hundred cubic feet (approximately seven hundred forty-eight gallons).

"Connection" means any physical connection to the city water system by any water service or any private water system or any pipeline extension.

"Cost" means the cost of labor, material, transportation, supervision, engineering, and all other necessary expenses as determined by the city.

"County" means Lewis County, Washington.

"Cross-connection" means any connection between any part of the water system used or intended to supply water for drinking purposes and any source or system containing water or substance that is not or cannot be approved as safe, wholesome, and potable for human consumption, or any interconnection to another source or system that has not been approved by the public works director on or after the date of adoption of this ordinance.

"Customer" means any person, firm, or corporation obtaining or using water service from the water system of the city.

"Equivalent residential unit (ERU)" means or refers to a unit of water capacity determined by the city to be equivalent to the capacity (or average capacity) typically used by, or allocated to a single-family residential dwelling unit. For the purposes of this ordinance an ERU of water capacity shall be equal to three hundred gallons per day of water use as determined through the standard water billing process.

"Fire protection service, private" means water service and facilities for building sprinkler systems, hydrants, hose reels, and other facilities installed on private property for fire protection and the water available therefor.

"Fire protection service, public" means the service and facilities of the entire water supply storage and distribution system of the city, including the fire hydrants affixed thereto, and the water available for fire protection, excepting house service connections and appurtenances thereto.

"Mains" means a water line designed or used to serve more than one premises. Mains

and connections to mains are controlled by the city.

"Multiple dwelling units" means duplexes, apartment buildings, condominiums, mobile home parks, trailer courts, multiple unit commercial structures, and other multiple unit structures or buildings.

"Person" means natural persons of either sex, associations, partnerships, and corporations, whether acting by themselves or by a servant, agent, or employee, the singular number to be construed to include the plural and the masculine pronoun to include the feminine.

"Public Works Director" shall mean public works director or designee.

"Premises" means a private home, building, apartment house, condominium, trailer court, mobile home park, a group of adjacent buildings, or property utilized under one ownership and under a single control with respect to the use of water and responsibility for payment thereof.

"Service, commercial" means water services to businesses engaged in the manufacture and/or sale of a commodity or commodities or the rendering of a service, hotels, motels, schools, hospitals, multiple dwelling units and public office buildings.

"Service, industrial" means a water service to a business enterprise engaged in the manufacture of products, materials, equipment, machinery, and supplies or commodities on a substantial or major scale.

"Service, residential" means a water service to a single-family dwelling unit or a water service for residential lawn sprinkling.

"Service, temporary" means a water service and facilities rendered for construction work and other uses of limited duration and the water available therefor.

"Service charges" means fees, costs, rates, and charges for water services established and set by ordinance.

"Service installation" means all piping and fittings from the main to and including the water meter assembly. All piping and fittings from the meter to the premises served shall be the customer's responsibility.

"System" means all water source and supply facilities, transmission lines, storage facilities, pumping plants, distribution mains, and appurtenances.

"System, private" means a water system, or pipelines and appurtenances, pumping facilities, reservoirs, treatment facilities, or any combination thereof that are owned by other than the city.

#### **13.04.020 Application for connection.**

A. Each premises shall have separate water service or services as set forth in CMC 13.04.060, Water services for premises. Any person desiring water service for any premises shall make application therefor on a printed form furnished by the city for that purpose. The application form shall contain the following information:

1. Name and address of applicant;
2. Location and legal description of premises where water service is requested;
3. Purpose for which the water is to be used;
4. Number of living units within the premises to be supplied;
5. Statement that the applicant agrees to abide by the rules and regulations contained herein and agreements contained in the application;
6. Signature of owner of premises or his duly authorized representative or agent;
7. Date signed; and
8. Such additional information as the public works director shall require.

B. Applicants for service within the corporate limits of the city may be required to obtain a building or plumbing permit for the premises where water service is being requested.

C. Applicants for service outside the corporate limits of the city shall provide required information, comply with city annexation agreement requirements, and sign an agreement stating that they will not oppose annexation of the area including the premises for which service is being applied.

D. If no public sewer service is available to any premises for which application for water service is made, approval of the application shall be conditioned upon the applicant obtaining a septic tank permit from the Lewis County health district, and no connection shall be made if such septic tank permit is not issued.

E. When all applicable fees and charges have been paid, the approved application shall constitute an agreement whereby the applicant agrees, as a condition for the continued use of water, to conform to rules and regulations of the city as contained in or attached to the application provided for in this chapter, or any amendment hereto.

F. The application for water service shall contain an agreement requiring the person making the same to pay for the water applied for at the rates and in the manner specified by city ordinance; reserving unto the city the right to charge and collect the rates and to enforce the penalties provided in city ordinance and to change the rates by ordinance at any time; allowing the city to temporarily discontinue the service at any time without notice to the customer; and specifying that said agreement is subject to all the provisions of this chapter and of any ordinance of the city relating to the public water system of the city. The agreement shall provide that the city shall not be held responsible for any damage by water or other cause resulting from defective plumbing or appliances on the premises supplied with water installed by the owner or occupant of such premises, and shall provide that in the event the supply of water shall be interrupted or fail by reason of accident or any other cause whatsoever, the city shall not be liable for damages for such interruptions or failures, nor shall such failures or interruptions for any reasonable period of time be held to constitute a breach of agreement on the part of the city or in any way relieve the customer from performing the obligations of his agreement. The city shall not be held liable for damage to personal property stored in the portion of the street between the curb and the property line, nor to real property in said area, resulting from leakage or the breaking of pipes or appliances maintained by the city within that portion of the street herein described. All agreements contained in the application shall take effect from the date the application is approved by the public works director. If for any reason the public works director does not approve an application requiring his approval, the public works director shall explain the reason for disapproval in writing at the request of the applicant, and no conditions or agreements shall be in effect.

#### **13.04.030 Developer connection fee/capacity charge payment.**

A. Owners and/or developers of all commercial property shall be required to pay all connection fees and capacity charges in accordance with the current ordinance within six months of the date the application has been approved. If all capacity charges, connection fees, and any other fees identified on the application are not paid within six months of the date of approval of the application, the application and any approval shall be considered void. All such fees and charges shall be paid prior to any physical connection or installation of facilities and no service shall be delivered or provided until such fees are paid. Such charge and/or fees shall be



non-refundable.

B. Owners and/or developers of residential property that have applied for water connections for up to, but not exceeding, ten single-family residences or ten ERUs, shall be required to pay all connection fees and capacity charges in accordance with current ordinance within six months of the date the application has been approved. If all capacity charges, connection fees, and any other fees identified on the application are not paid within six months of the date of approval of the application, the application and any approval shall be considered void. All such fees and charges shall be paid prior to any physical connection or installation of facilities and no service shall be delivered or provided until all such fees are paid. Such charges and/or fees shall be non-refundable.

C. Owners and/or developers of residential property that have applied for water connections for a capacity for greater than ten single-family residential units or greater than ten ERUs where such projects are to be constructed in phases over a period of time, must specifically request and receive approval for a time period or duration in excess of six months.

D. If approval is given for a duration in excess of six months, then the owner or developer of such residential property shall be required to pay one quarter of the total connection fees and capacity charges for the entire development project. This twenty-five percent shall be non-refundable in the event that any such development or project is canceled, and this twenty-five percent shall also be considered as the connection fees and capacity charges for the last twenty-five percent of such costs for the development. Prior to actually connecting any single-family residential unit or other units for which the equivalent residential capacity has been requested, approved, and allocated, the connection fees and capacity charge must be paid in full.

#### **13.04.040 Connection to the city's main.**

A. After payment of all connection fees, capacity charges, service charges, and any other applicable fees and charges, and the execution of the agreement herein described, the public works director shall cause the premises described in the application, if the same abut upon a street in which there is a city water main, to be connected to the city's water main by a service pipe extending at right angles from the main to the property line except as herein provided. The city connection, which shall include a stopcock placed within the curb line and the meter set assembly in conformance to city specifications, shall be maintained by and kept within the exclusive control of the city.

B. Wherever it has been ascertained that a retaining wall, ornamental wall, or landscaped rockery, or any other form of permanent structure is to be or has been erected upon any portion of a city street or public place in which a water service connection has been installed, the public works director shall cause the relocation or readjustment of such water service connection or any portion thereof. The cost of such relocation or readjustment shall be charged against the property on which the erection of the permanent structure, as above referred to, is to be done or has been done and to the owner thereof. In no case shall the city be required to maintain or repair any portion of the service connection beyond the meter set assembly.

C. Where there is a water main in front of any premises the owner of such premises supplied by city water shall have his own separate service connection with the city main and the premises so supplied shall not supply water to any other premises. If two or more premises are supplied by one metered service, service charges for each premises supplied with water shall be assessed for each separate building or premises so supplied. Services existing as of the effective date of this ordinance shall be separated at such time as the owner or occupant thereof shall obtain a building permit for the remodeling or structural alteration of such premises.

**13.04.050 Maintenance or continuance of water capacity.**

A. In order for any commercial and/or industrial customer served by the city water system to maintain capacity that has been previously allocated to said commercial and/or industrial customer, such customer must demonstrate use of water capacity that has been previously allocated in accordance with the provisions of this ordinance.

B. If a commercial and/or industrial water customer has reduced its water usage as defined in this ordinance, the city shall notify said commercial and/or industrial water customer in accordance with this section and reduce the amount of water capacity allocated to such commercial and/or industrial customer, in accordance with this section.

C. In order for a commercial and/or industrial customer receiving service from the city water utility to maintain or hold water capacity as may have been previously allocated, such commercial and/or industrial customer must use a minimum of 80 percent of the total water capacity for at least four consecutive months in any 12-month period.

D. If any commercial and/or industrial customer fails to use 80 percent of the previously allocated capacity for four consecutive months in any 12-month period, the water capacity allocated to that commercial and/or industrial customer shall be determined as follows:

1. The lowest usage in the highest consecutive four-month period shall be 80 percent of the new allocated water capacity for any such commercial and/or industrial customer.

2. If the city reduces the allocation of water capacity from the quantity that was originally purchased from the city, the city shall refund that portion of the amount of actual capacity charges paid by the commercial and/or industrial customer that relates to the amount of capacity reduced.

E. In order for a commercial and/or industrial customer to maintain their allocation of water capacity, after it has been determined by the city that a reduction in their allocation of such capacity is warranted, said commercial and/or industrial customer shall pay a capacity maintenance charge per month, in addition to their regular water use rate fees and charges. Such capacity maintenance charges shall be calculated by multiplying the number of ERUs of water capacity that the city has determined warrants reduction, by the current minimum monthly service capital improvement charges for water.

F. During any three months in a 12-month period, if any commercial and/or industrial customer has been identified as using one ERU or greater of water capacity above the amount of capacity that has been allocated and if there is unallocated water capacity available, the city shall charge such commercial and/or industrial customer the current capacity costs or charges for such increased capacity. If there is no unallocated capacity available the city shall instruct the commercial and/or industrial customer to reduce usage to the level of capacity that has been allocated. If said instructed commercial and/or industrial customer does not reduce water usage to the level of allocated capacity the city shall take action(s) necessary to cause the capacity used to be reduced to the allocated level. Such action(s) may include imposing restrictions or limitations to such water service or disconnection of water service.

G. If capacity is available, the highest usage above the previously allocated capacity shall be the new allocated water capacity for any such commercial and/or industrial customer upon approval of the city council (if required) and upon payment of the associated water capacity charges.

H. The public works director shall conduct an initial evaluation of water use to determine allocated capacity of water for all existing commercial and/or industrial customers. On an annual basis the public works director shall review the water use for such commercial and/or industrial customers to identify such customers that have used less than or more than their allocated capacity.

I. If it is determined that the capacity allocated to any commercial and/or industrial

customer warrants reduction in accordance with this section, the city shall provide written notice to said commercial and/or industrial customer indicating the city's intention to adjust or reduce the water capacity allocation.

J. If it is determined that the capacity allocated to any commercial and/or industrial customer warrants an increase in accordance with the provisions of this section, or if it is determined that any commercial and/or industrial customer has used greater than the allocated capacity of water service, and such additional water service is unavailable the city shall provide written notice to said commercial and/or industrial customer indicating the city's intention to adjust or increase or restrict to the allocated capacity the water capacity allocation.

K. The notice shall provide a 30-day comment period prior to the implementation of any such adjustment or reduction of their capacity allocation. The public works director shall review and consider any comments received during this 30-day comment period prior to making a final determination on any such adjustment or reduction of their capacity allocation.

L. Should the public works director determine that the water capacity warrants being increased and should the city approve such increase, payment of the related capacity charges shall be due within 10 days of the date of the final determination notice. If such capacity charges are not paid within this 10-day period the city shall take such action(s) necessary to cause the capacity used to be reduced to the previously allocated level. Such action(s) may include imposing restrictions or limitations to such water service or disconnection of water service.

#### **13.04.060 Water services for premises.**

Each premises shall have a separate water service or services. All water services shall be metered. Premises containing multiple dwelling units and/or containing more than one commercial or industrial business shall have separate metered water service for each individual dwelling unit and/or commercial or industrial unit, except where situations and/or special conditions exist that make an individual service for each unit impossible or unfeasible at the discretion of the public works director who shall determine when such situations or conditions prohibit individual services.

#### **13.04.070 Cross-connections.**

The city follows the procedures to enforce the cross-connection code using: Washington State Standards for Cross-Connections (WAC 246-290-490), the city of Chehalis Cross-Connection Control Plan, Manual of Cross-Connection Control Published by The University of Southern California (USC MANUAL), and Cross-Connection Control Manual Published by the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA) as they presently exist and as they may, from time to time, be amended.

A. The city requires that all water service connections (domestic potable water, fire sprinkler systems, or irrigation systems); existing and future connections follow the guidelines of the city's cross-connection control plan. Any such cross-connection existing hereinafter is hereby declared unlawful and shall be disconnected and removed immediately. The cross-connection control specialist (CCS) or any designated representative of the city may limit the kind and number of service connections for any separate premises. No water service connection shall be allowed from the city water mains to any premises supplied by water from any other source unless the public works director gives special permission and that the connection is protected with an appropriate backflow assembly approved by the CCS.

B. When a cross-connection is found, an approved backflow prevention assembly(s) will be installed at the expense of the user, and the user will be required to follow the city's cross-connection control plan where a premises isolation backflow assembly will be installed. In-premises installation of a backflow assembly can be installed only with written permission by the CCS or mandated along with premises isolation when the CCS or any designated representative

of the city and any other regulatory agencies determine a high health hazard exist, in accordance to WAC 246-290-490 and the city's cross-connection control plan. The backflow prevention assembly(s) once installed will be inspected and approved by the city and tested by a state certified backflow assembly tester (BAT). The public works department requires a certified test indicating the assembly(s) has passed before releasing the certificate of occupancy on any building.

C. Backflow prevention assembly(s) installed will be of a type and model pre-approved by the Department of Health (DOH) or the city and will be installed, inspected, and tested in accordance to the city's cross-connection control plan. The city will have the authority to perform regular inspections on all backflow assembly(s) (premises and in-premises) connected to the city's water system and will be provided access to the premises to inspect.

D. New water services will be required to install a residential dual check device immediately downstream of the water meter. Installation of this residential dual check device on a retrofit basis on existing service lines will be instituted at a time and at a potential cost to the homeowner as deemed necessary by the city.

E. The city will notify the service customer that an annual test of the backflow prevention assembly(s) is required not less than 30 days before such annual test is required.

F. Backflow assembly testers (BAT) shall supply the city with documentation indicating their testing equipment has a current certificate of accuracy and that they have a current Department of Health BAT certification card. This information must be submitted on an annual basis as indicated in the city's cross-connection control plan.

#### G. Violations.

##### 1. Violations by customer.

a. It is a violation of the cross-connection control plan for a customer to:

- i. Fail to correct a faulty cross-connection within seven days of discovery of the problem;
- ii. Fail to install, test, or maintain a backflow prevention assembly or premise isolation, as required by the cross-connection control plan;
- iii. Remove or bypass a backflow prevention assembly(s);
- iv. Refuse to allow a designated city representative access to any structure serviced by the public water supply for inspection.

b. Violations by a customer subject the customer to termination of service by the city. Service shall not resume until the customer;

- i. Repairs the violation so that the cross-connection is in compliance with the city's cross-connection control plan as determined by the city; and

ii. Makes payment to the city for:

- (1) Its expenses incurred for inspection and enforcement of the plan, including attorney fees; and
- (2) Any penalties, as specified in this code.

##### 2. Violations by certified backflow assembly testers.

a. It is a violation of the cross-connection control plan for a backflow assembly tester (BAT) to:

- i. Intentionally or negligently file forms containing false data, including but not limited to data not derived from actual testing.

b. A violation by a backflow assembly tester may subject the BAT to:

- i. Penalties as specified in this code; and/or
- ii. Reporting by the city to the Washington Certification Board with a recommendation of license revocation.

#### H. Penalties.

1. Penalties for violations by customer, per subsection (G)(1) of this section.
  - a. 1<sup>st</sup> violation - \$200.00
  - b. 2<sup>nd</sup> violation - \$500.00
  - c. 3<sup>rd</sup> violation - \$1,000.00
  - d. Fee to restore water service - \$50.00
2. Penalties for violations by backflow assembly tester, per subsection (G)(2) of this section.
  - a. 1<sup>st</sup> violation - \$1,000.00
  - b. 2<sup>nd</sup> violation - \$2,000.00
  - c. 3<sup>rd</sup> violation - \$5,000.00.

#### **13.04.080 Private pipe standards.**

All persons connecting to city service or laying their own private pipe shall be required to use pipe of sufficient strength and quality, and the installation shall be done in such a manner so that breaks, leaks, and freezing are avoided, and contacts with contaminants are not possible. In all permanent sprinkler systems or other systems where contamination or cross-connections are possible, an approved backflow prevention device shall be installed. The public works director shall maintain private services from city mains in streets that are being graded and shall have access on private property as shall be necessary to maintain such pipes during the work, and shall as soon as practicable upon the completion of such work, relay such pipes in the street. Except for the above cause, owners shall maintain their private pipes from the end of the city's service to and into their property, or, in the event the public works director finds it necessary to maintain the same, the owner shall relinquish all right in said pipes. When necessary, the public works director may slope service on property to conform to the slope occasioned by the grading of the street and charge the expense thereof to the owner of the service.

#### **13.04.090 Water services meter location.**

All water service connections shall be made by, or under the control of the city. Meters shall be placed as follows:

A. Within the corporation limits of the city, meters shall be placed within two feet of the edge of the sidewalk or proposed sidewalk on the curb side in existing plats and within two feet of the sidewalk on the property side in new plats.

B. Within the county, meters shall be placed within the county right-of-way and within two feet of the property line nearest the customer's premises.

C. In instances other than contained herein, or where the public works director determines that unusual or conflicting conditions exist, the location of meters shall be determined by the public works director.

#### **13.04.100 Service connection-Special conditions.**

When two or more premises are being serviced by one water service connection, the city shall have the right to require the installation of additional water service connections from the water main to the premises. When additional water service connections are provided for any premises, all water service shall be metered and installed in an approved manner. No premises shall be permitted to furnish water to any other premises, except during an emergency, which shall not exceed a period of 30 days. An application to cover the emergency connection shall be filed with the city within 48 hours of the occurrence causing the emergency. When the intended use of the water service is changed or the structure served is altered, a new service shall be installed at the customer's expense unless the existing service complies with the provisions hereof.

**13.04.110 Water service connection fees and charges.**

Water connection shall be made by and under the control of the city after an application for same has been approved by the city and payment of all water service connection/capacity fees, installation charges, and any other applicable fees and charges as required by city ordinance and/or city council approved and established late-comer fee agreement(s) has been made. All water capacity charges received shall be considered capital revenue of the city.

**13.04.120 Service connection--Location of service pipe.**

Water service pipe shall not be laid or maintained parallel with and within five feet horizontally of any sanitary sewer, electrical conduit, gas pipe, or communications cable, septic tank, or drain field. When additional water pipe extensions or replacements are to be made beneath the surface of the ground within the premises and connected with existing water service pipes between the meter and the premises, an application therefor shall be made to the city for inspection and approval prior to backfilling the trenches.

**13.04.130 Customer shut-off valve.**

Shut-off valves of approved full flow pattern with key or hand wheel shall be installed in the water service pipe leading from the city meter to the building within the premises served in accordance with the applicable plumbing code. Shut-off valves, where buried, shall be properly enclosed in a minimum six-inch diameter pipe, or box of concrete, plastic, or iron with an approved cover, protected from freezing and readily accessible. Valves or customer owned equipment are not permitted to be installed within the city's meter box. No outlet shall be connected to the service extension pipe between the city meter and the customer shut-off valve.

**13.04.140 Plumbing requirements.**

All persons installing fixtures or appliances to be supplied with water from the city main shall be subject to the requirements of the Uniform Plumbing Code. Persons installing plumbing in new structures shall leave the valve at the meter in the "off" position upon completion of their work. Persons making additions or repairs to existing plumbing systems shall leave the valve at the meter in the position in which it was found in beginning their work. The public works director shall have the right to refuse service or discontinue service in any situation where it is discovered that applicable city standards have not been complied with in making the installation.

**13.04.150 Inspection and access for inspection.**

Authorized employees of the city, properly identified, shall have access at reasonable times of the day to all parts of the premises or within buildings thereon to which water is supplied from city mains, for the purpose of checking conformity to these regulations, provided, such employees shall have access to single-family residential premises only upon a showing of probable cause to believe that the water service or plumbing therein is not in conformity with these regulations. Whenever the owner or occupant of any premises supplied by city water restrains authorized city employees from making such necessary inspections, water service may be refused or discontinued.

**13.04.160 Turn-on-New installation.**

When new water service connections are installed by the city for any premises, the valve at the meter shall be turned to the "off" position and remain off until a turn-on order shall be issued by the public works director upon written application therefor by the owner of the premises to be supplied after inspection and approval by the city and after the proper plumbing inspection has been performed and a certificate issued that all provisions of the Uniform

Plumbing Code have been complied with.

**13.04.170 Turn-on-Request.**

When it is desired to have the water turned on after it has been turned off for any reason, the turn-on shall be made upon receipt of a written application or verbal request by the city, provided all service charges, including any penalties owed at the time of the request, or receipt of the written application have been paid, the city may require that conditions set forth in section 13.04.160, turn on--new installation, apply. The customer shall also be charged for a service call as required by section 13.04.200, Service call.

**13.04.180 Turn-on unauthorized.**

It shall be unlawful for any person, except duly authorized employees of the city to turn on the water supply to any premises after a turn-off is made at the meter by the city. The water service pipe to any premises turned on by an unauthorized person after said water supply has been turned off by the city for cause may, upon discovery, be disconnected by the city from the water main in the street and shall not be connected again until violations of these rules and regulations have been corrected and all expenses incurred by the city relating to disconnecting and reconnecting the service pipe are paid.

**13.04.190 Turn-off, turn-on liability disclaimer.**

The city shall not be liable for any damage to person or property that may result from the turn-off or turn-on of the water service or from the service being left on when the premises may be unoccupied.

**13.04.200 Service call.**

A. Service calls, for any reason, including but not limited to, convenience or emergency turn-off or turn-on, paid delinquent account turn-on, or complaint leaks, or other problems due to trouble in lines not owned by the city, or problems in lines, valves, or meters owned by the city, caused by problems or conditions other than by the city, may be charged to the customer requesting the service call at the appropriate rate as provided in city ordinance. The amount charged for the service call shall be billed to the customer as a separate charge and shall be due and payable within seven days after the date of the bill. Section 13.04.500, delinquency/lien, shall apply when any service call charges become delinquent and unpaid.

B. Service calls, when it is determined by the city that the problem or trouble is in lines, valves, meters, or facilities owned by the city, will result in no charge to the customer.

**13.04.210 Responsibility for water service rate charge.**

All accounts for water shall be kept in the name of the owner of the premises for which service is installed unless the property owner requests to have statements for service rate charges mailed to a tenant, lessee, or agent, but such mailing shall not relieve the property owner from liability for payment of water service rate charges incurred.

**13.04.220 Customer service water leak adjustment.**

A. Any water customer of the city may receive a maximum of one utility bill adjustment per year based upon unexpected leaks or breakdowns of customer plumbing, subject to acceptable review and acceptance of their adjustment request by the city. The maximum adjustment period for residential customers shall be one residential billing cycle (two months). The maximum adjustment period for commercial customers of the city shall be two one-month billing cycles.

B. All requests for utility bill leak adjustments shall be made in writing to the public

works director. The request for adjustment must contain the name and address of the utility customer, justification for the leak adjustment, information regarding what repairs have been made to correct the customer problem giving rise to the need for adjustment, and must be signed by the party making request for adjustment.

C. The public works director shall review the application for adjustment, seek additional information if it is deemed necessary to make a decision regarding the adjustment, and provide to the customer an acceptance or rejection of the adjustment request within 10 days of actual receipt of the written request for adjustment. Should the utility bill leak adjustment be authorized by the public works director, the adjustment shall reflect the previous year's usage during the billing cycle wherein the adjustment is sought, or if there is no previous year's usage record, the bill will be adjusted to equal the billing amount of the customer's previous billing cycle.

D. Any appeals from decisions of the public works director regarding the rejection or amount of adjustment granted under the terms of this ordinance shall be made directly to the city manager. Said appeal must be in writing and filed with the city manager within 10 days of receipt of the decision of the public works director. Failure to abide by these procedural requirements will render public works director's decision final.

E. Utility bill adjustments shall not be granted if the property owner, after notification by the city, refuses to make repairs in a timely manner or isolate the leak to prevent continued water loss from the city's water system.

#### **13.04.230 Inactive water service-Inactive water service utility account.**

In order for a water service and its associated water service utility account to remain active and continue to be authorized to receive water service, water utility bills must be paid. Even if the water service is inactive and no water consumption occurs during a billing period, water service capital improvement rate charges as established by ordinance must be paid. When any service is turned off for nonpayment of water utility bills for a period of four months, the water service utility account shall become inactive and it shall be subject to termination and the water service shall be subject to disconnection and removal of the water meter at the discretion of the public works director.

#### **13.04.240 Reactivation of inactive water service.**

A. If any single-family residential unit water service has been inactive and the associated water service account has been terminated, the owner of said single-family residential unit may request reinstatement of the water service and water service account if:

1. There is sufficient capacity of water service available;
2. There is no moratorium or prohibition to such reactivation of single-family residential unit;
3. The owner pays the lesser of either the current connection/capacity charges for such water service, or back (or unpaid) water service capital improvement rate charges for water service. Back charges shall be equal to the total current water service capital improvement rate charges for the minimum residential water service multiplied by the total number of months that the water service has been in an inactive status and/or for the period of months that such capital improvement rate charges have not been paid; and
4. The owner pays all costs associated with the installation or reinstallation of water services and any other improvements or modifications necessary to provide such water service. The amount of such installation charges shall not exceed water service installation charges in effect at the time of the request to reactivate the services made.
5. All applicable fees and charges have been paid as established by the Storm and Surface Water and the Sewer System Ordinances.



B. In order for any commercial water service or multiple ERU water service or account, which has been inactive and/or terminated to be reactivated, it must meet the following conditions:

1. There is sufficient capacity of water service available;
2. There is no moratorium or prohibition to such reactivation of water service;
3. The owner or persons requesting activation of such water service pays the lesser of either the current connection/capacity charges per ERU or back (or unpaid) water service capital improvement rate charges for the minimum commercial water service multiplied by the total number of months that the water service has been in an inactive status and/or for the period of months that such capital improvement rate charges have not been paid; and
4. The property owner or person requesting reactivation of such commercial or multiple ERU water service shall pay the water meter service installation charges or any or all charges or costs necessary to provide a water meter service installation then in effect.
5. All applicable fees and charges have been paid as established by the Storm and Surface Water and the Sewer system Ordinances.

**13.04.250 Construction or repairs-Report.**

It shall be the responsibility of the building official to report to the public works director the beginning of construction or repairs to all buildings in the city, which report shall contain a general description of the building to be constructed or repaired, the name of the owner and contractor thereof, and the address thereof. Water for construction purposes shall only be furnished upon application of the owner of the premises, or his authorized agent. Water for construction purposes shall be furnished by meter and charged to the owner of the premises supplied.

**13.04.260 Disconnection of service-Condemed building.**

Whenever a building or premises supplied with water has been found by the proper authorities to be dangerous to human life and unfit for human habitation, and notice of such findings has been provided to the public works director by said authorities, the public works director shall cause the water service to such premises to be turned off. Water service to such premises shall not be turned on until the owner and/or agent has secured a release or clearance from the proper authorities.

**13.04.270 Disconnection of service-Demolished or removed building.**

Whenever a building or structure supplied with water has been proposed by the owner to be demolished or removed, the owner and/or agent of the property shall notify the city of such proposed actions a minimum of seventy-two hours prior to the anticipated date when the building will be demolished or removed. The public works director shall then cause the water service to such premises to be turned off prior to the demolition or building removal. Water service to such premises shall not be turned on until the owner and/or agent has demonstrated that there are no plumbing problems associated with the premises and waterlines connected to the water service, and until the owner and/or agent has requested that the water service be turned on.

**13.04.280 Meter ownership.**

All meters provided and installed on water service connections by the city shall be and remain the property of the city.

**13.04.290 Meters--Commercial and industrial-Change in meter service size.**

Whenever the owner of any premises, with an existing water meter service, desires to change a meter service size, an application shall be made to the city and, upon approval by the public works director; the new meter service shall be installed at the expense of the owner. No credit shall be given for the existing meter service. Unless the application specifically requests a greater or lesser allocation of water capacity and, in the case of requests for more capacity, such application is approved by the public works director, no change in the water capacity allocation to the premises shall result from the change in meter service size.

**13.04.300 Meter maintenance and repair.**

A. The city shall maintain and repair all service meters and replace meters periodically when necessary if rendered unserviceable by ordinary use. Where replacement or repair to any meter is necessary by reason of the neglect, carelessness, or willful act of the owner or occupant of the premises served, all expenses of such replacement or repair incurred by the city shall be borne by the owner of the premises.

B. Whenever demand periodically exceeds the rated capacity of a meter to the extent that the meter may be damaged, the city shall notify the owner. After evaluating the owner's requirements, the public works director shall advise the owner what meter service size is necessary to give proper service without risking potential damage to the meter and the estimate of the cost to install the larger meter service. The city shall then install the proper size meter service and charge the full cost thereof to the owner. If the owner does not pay the cost to install the larger meter service within thirty days after being billed for said cost, then the city shall terminate the water service. If the owner fails to pay the cost to install the larger meter service within thirty days after being billed, the city shall proceed to file a lien against the premises pursuant to section 13.04.500, delinquency/lien.

**13.04.310 Meter tests.**

A. When any customer makes a complaint that the water service charges for any period is excessive, the city shall, upon the customer's request, have the meter re-read and the water service pipes and plumbing fixtures on the premises inspected for leaks in the event that said actions are practicable and/or possible. The city may charge the customer for a service call in accordance with section 13.04.200, service call, for re-reading the meter and inspecting the premises.

B. Should the customer then request that the meter be tested for accuracy, they shall make a deposit, in the amount established by city ordinance.

**13.04.320 Water service outside corporate limits.**

All rules and regulations referring to the management of the city water system effective inside the corporate limits of the city shall apply equally outside the corporate limits except as otherwise specifically set forth herein.

**13.04.330 Private water systems.**

The city shall not operate and maintain private water distribution mains inside or outside the corporate limits of the city in conjunction with its own facilities. All private water systems existing in conjunction with city facilities shall be equipped with an approved check meter at the expense of the private water system, and the readings of such check meter shall be compared to readings of individual meters served by the private system to detect any discrepancies in water usage. All costs over and above those resulting from the water usage of customers on the private water system shall be borne by the owner and operator of the private water system.

#### **13.04.340 Fire protection.**

A. Any customer using city water for all purposes shall be entitled to a separate standby fire protection service. Such standby fire protection service shall be provided through a separate water connection. The water connection fee for such standby fire protection service shall be as provided in city ordinance. Standby fire protection lines shall be used for no other purpose than for standby fire protection service and all other uses thereof shall be prohibited. The monthly charge for such standby fire protection service shall be as provided in city ordinance. Such standby fire protection connection fees and standby fire protection service charges shall be based upon the size of the customer's line at its connection to the main, and shall not be based on any specific pressure or volume of water furnished to the customer. The city does not, by the connection of a standby fire protection service, and shall not, by agreement or otherwise, warrant or guarantee a minimum water pressure or water volume for such service.

B. Where standby fire protection service is provided, no charge shall be made for water used in extinguishing fires of incendiary or accidental origin if the customer at the location where the fire occurs gives written notice to the city within ten days from the time of such fire that a fire has occurred. Otherwise, a charge for all water used shall be made at the rate for use of fire protection facilities provided in city ordinance.

#### **13.04.350 Fire protection meters.**

A. Service of more than one premises by a fire service shall not be permitted. All water service connections used for fire protection shall be installed in a manner as approved by the public works director, and a metering device approved by the public works director shall be installed at the expense of the owner of the premises as follows:

1. Detect or check meters of size and type approved by the public works director shall be permitted on straight automatic fire sprinkler services, which may include hose racks inside the building for fire fighting purposes only. All water registered by the bypass meter shall be billed at the rate established by city ordinance, unless caused by fire reported within ten days. Persistent indication of unauthorized use of water through a detector check meter shall be cause for installation of a fireline meter at the expense of the owner or agent, or termination and disconnection of such fire protection service, at the discretion of the city.

2. Fireline meters of a size and type approved by the public works director shall be installed on all fire services where hydrants, outside hose outlets, or connections allowing the use of water for other purposes than the extinguishing of fires exist.

B. Delinquency in payment of expense for fire protection service or failure of the owner or occupant to make changes in meter installations as herein provided after reasonable notice from the department, shall be sufficient cause of discontinuance of fire service to the premises. Fire protection systems shall be installed and maintained by the owner in a manner approved by the public works director as to prevent backflow into the city's system.

#### **13.04.360 Misuse of fire protection water.**

Use of water from a fire protection service line or facilities for purposes other than extinguishing fires of incendiary or accidental origin, exclusive of that amount used for testing purposes, shall constitute misuse of fire protection water, and shall be grounds for the city to terminate fire protection service and disconnect the fire protection service line until such time as it is demonstrated to the satisfaction of the public works director that the misuse of fire protection water will not reoccur.

#### **13.04.370 Hydrants-Authorized use.**

No person other than authorized employees of the city shall operate fire hydrants and

hose outlets unless proper arrangements have been made for payment therefor and permission has been granted by the public works director.

**13.04.380 Hydrants-Temporary use.**

Persons desiring water service from a fire hydrant or hose connection shall make application therefor to the city at the public works department on an application form provided by the city. The applicant shall be required to submit a hydrant meter deposit of \$100.00 plus a non-refundable on/off fee of \$60.00. The applicant shall also sign the application form and agree to the provisions and requirements listed on the application form, and agree to pay the water use rate charges as established by city ordinance for water used through the hydrant meter assembly. If the hydrant meter assembly is damaged, the city shall retain the deposit or portion thereof necessary to replace or repair said hydrant meter assembly.

**13.04.390 Damaging water system.**

Any person causing damage to any property belonging to the city shall be liable to the city for any and all damages resulting either directly or indirectly therefrom.

**13.04.400 Crime to damage or interfere with access to the water system.**

No person shall disturb, break, deface, damage, or trespass upon any property belonging to or connected with the water system of the city in any manner whatsoever. No person shall store, maintain, or keep any goods, merchandise, materials, or rubbish within a distance of five feet or to interfere with the access or operation of any water meter, gate valve, fire hydrant, or any other appurtenances in use on any water service, connection, or water main.

**13.04.410 Emergency interruption of service.**

In the event of emergency or whenever the public health, safety, or the equitable distribution of water so demands, the public works director may authorize the city to change, reduce, or limit the time for or temporarily discontinue the use of water. Water service may be temporarily interrupted for purposes of making repairs, extensions, or doing other necessary work. Before so changing, reducing, limiting, or interrupting the use of water, the city shall notify, insofar as practicable, all water consumers affected. The city shall not be responsible for any damage resulting from interruption, change, or failure of the water supply. In addition, the city makes no commitment as to the volume of water available, pressure, or continuity of service; and will not be liable for injuries or damage due to insufficient volumes, inadequate pressure, or interruption of service.

**13.04.420 Construction standards.**

All persons, firms, corporations, and governmental agencies, and/or their contractors, repairing, replacing, installing, extending, or performing other work on water system lines, facilities, service lines, connections, and/or appurtenances thereto, or performing other work that may interfere, conflict, affect, or endanger the water system of the city shall follow and comply with the provisions of the engineering development code of the city as adopted by the city. Where the engineering development code of the city are silent on any construction standards issue, the current version of the Washington State Department of Transportation/Washington State Chapter of the American Public Works Association Standard Specifications for Road, Bridge, and Municipal Construction shall apply.

**13.04.430 Miscellaneous control devices.**

The city reserves the right to require any customer to install, as a condition of water service, a pressure reducing valve, backflow prevention device, pressure relief valve, and/or

similar devices, at any location where the public works director determines a need to protect the city's water system and/or facilities.

**13.04.440 Protection of the public health.**

The public works director shall conduct periodic inspections of the water system in coordination with the appropriate health department. The public works director shall, from time to time, suggest rules and regulations deemed necessary by him to the city council to protect the municipal fresh water supply from pollution.

**13.04.450 Method of billing and payment.**

Payment for water service, in accordance with the applicable provision(s) of city ordinance related to water rates, shall be due on the 20<sup>th</sup> day of the month. Water statements for residential services will be mailed to the customers on a bimonthly basis. Water statements for commercial services will be mailed to those customers on a monthly basis. All water statements are to be paid either by mail or in person to the city at the billing office. Unpaid statements become delinquent on the 21<sup>st</sup> day of the month, or at 5 p.m. on the next full business day, and a delinquency charge as established by city ordinance shall be added to each unpaid account. A delinquent notice shall be mailed and payment of the delinquent balance must be received within seven days of the date of the notice to avoid service interruption. On the next business day, a list of remaining delinquent accounts shall be compiled and the list given to the water superintendent, it shall be his duty to immediately thereafter shut off the water service to such delinquent premises.

**13.04.460 Alternative method of payment.**

A. Users of utility services provided by the city may, at their option, pay to the city at anytime prior to the billing date, as an advance payment, toward the actual or estimated utility service charges for water, sewer, and storm service to be billed for the month or next succeeding month during which such charges are incurred.

B. In the event the amount paid exceeds or is less than the actual service charges incurred, any excess amount paid in advance shall be credited to the next succeeding billing for utility service charges, and any amount not paid in advance shall be paid in full by the due date. All unpaid balances shall be considered delinquent and subject to delinquent fees and penalties as established by city ordinance.

**13.04.470 Method of billing private water systems.**

The total amount of water usage registered on the check meter shall be billed to the owner, operator, or owner's agent of the private water system, or at the discretion of the city, where the private line or system contains individual meters, the total amount of water usage registered on the check meter shall be billed to the individual customers of the private line or system by dividing the usage among the customers as the individual meters indicate to accommodate an equitable distribution of the total usage, unless where special conditions exist and/or specific arrangements have been made and a written contract that is mutually agreeable to both the city and the owner or operator of the private system. Such contract shall state any pertinent conditions and delineate responsibilities. The rates for billing such private water system's usage shall be in accordance with the provisions of city ordinance as applicable.

**13.04.480 Charge for special improvements.**

Where special improvements or upgrading projects have been installed and the costs or portion of the costs of such improvements are determined to be financed by user charges from the customers served, or by benefitting from such improvements, such customers shall be

responsible for an additional charge to be added to their water use charges and included in their water bill statement. The amount of this additional charge shall be as determined and established by the city council for the specific improvements or upgrading project. Such additional charge shall be to satisfy all debt service requirements and other related costs only.

**13.04.490 Order for crediting incomplete utility bill payments.**

When payment has been made for only part of the total amount owed on combined utility bill, or for any reason payment of the total amount(s) owed on a combined utility bill has not been made, the city shall satisfy or credit such partial or incomplete payments to or toward amounts owed for stormwater, sanitary sewer services, any delinquency charges, fines or penalties, and/or service charges that may be owing, prior to applying or crediting any portion on the amount paid toward charges owed for water service.

**13.04.500 Delinquency/lien.**

A. All water rates shall be charged against the premises for which the service was installed. Any and all charges provided for, when the same become delinquent and unpaid, shall constitute a lien against the premises to which the same has been furnished. Enforcement of a lien and collection of a lien shall include, but not be limited to, the right to stop service and deny service thereafter to any and all owners and/or occupants of the premises until the charges for service and/or other charges have been paid in full.

B. In cases where the occupant of the premises moves to another location within the system and applies for water at the new location, services shall be denied at such location until and unless any statement for service against the first location is fully paid.

C. If any such charges are not paid, the city may record a lien at the office of the county auditor against the property for which the service was installed. Such lien shall include the delinquent charges and such customer shall be responsible for all costs incurred by the city, including reasonable attorney's fees for preparing the lien and the fee for recording the lien.

D. Failure to receive mail will not be recognized as a valid excuse for failure to pay charges due. Notice of change in ownership of property and change in mailing address must be given in writing by the property owner or his agent to the city.

**13.04.510 Driveway or crossing construction connection removal.**

Whenever a driveway or crossing to be used for vehicular traffic is constructed within that portion of a city street lying between the curb line and the property line, the public works director shall cause the removal and relocation of any water service connection or any part thereof which may be within the lines of such driveway or crossing; provided, however, that instead of such removal of water service connection the public works director may, if he deems it advisable, cause the construction of an iron or masonry box or chamber of sufficient strength to withstand the stress of vehicular traffic. The cost of removal, relocation, or maintenance of water service connections as provided by city ordinance shall be charged against the property for which driveway or crossing was constructed and to the owner thereof.

**13.04.520 Water main extension request.**

When a person desires to extend a city water main, that person must make a written request to the city and state on that request the location where the extension is desired, the purpose for extension, and give details and extent of any development they are considering, as well as any other factors as may be pertinent. The public works director shall evaluate all requests for main extensions, taking into consideration the availability of water in the existing mains, reservoir capacity, pressures in the area, and other local conditions. If the proposal is acceptable, specific conditions and requirements will be determined by the public works director.

**13.04.530 Water main extension design.**

The proposed main extension shall be designed by a licensed engineer and be approved by the public works director and appropriate governmental authorities. The design shall be in conformance with city standards as contained in the engineering development code of the city, and shall be designed by the use of a hydraulic analysis, considering pipe size, restrictions, peak demand, length of run, elevation differences, and other factors that may be pertinent.

**13.04.540 Water main extension installation.**

The person requesting a main extension shall be responsible for all costs of installation, including the connection fee as provided in city ordinance. The person requesting the main extension shall also be charged a fee to pay the costs of the inspection performed by public works department personnel and/or city contracted engineering firm's inspector. The amount of the fee for inspections shall be determined after assessing the entire project. The extension shall be installed in accordance with city standards included in the engineering development code of the city, and shall be inspected by the public works department to ensure the installation meets city standards.

**13.04.550 Appeal.**

Except for provisions required by local, state, or federal regulations, or by law, any water customer or person applying for water who questions, disputes, or feels aggrieved by the determination or decision of the public works director may submit an appeal in writing to the development review committee as provided in CMC 17.09.150 – Appeals, stating the reasons for the appeal and providing information supporting the basis of the appeal.

**13.04.560 Rules and regulations adopted.**

Unless otherwise restricted or provided for herein or in the engineering development code of the city, the rules and regulations of the Washington State Board of Health and the Standard Specifications for Municipal Public Works Construction, as published by the Washington State Department of Transportation and the Washington State Chapter of the American Public Works Association, shall be, and the same hereby are, adopted by reference.

**13.04.570 Violations and penalties.**

Any person willfully violating any of the provisions of this ordinance shall be guilty of a misdemeanor. Any person found guilty of such violation shall be fined a sum not to exceed \$500.00.

**13.04.580 Enforcement.**

It shall be the duty of the employees of the public works department, police department, fire department, and community development department to give vigil and aid to the public works director in the enforcement of the provisions of this ordinance and to this end they shall report all violations thereof which come to their knowledge to the office of the public works director

**13.04.590 Severability Clause.**

If any section, subsection, subdivision, sentence, clause, or phrase of this ordinance is for any reason held to be unconstitutional or void, such invalidity shall not thereby affect the validity of the remaining portions of this ordinance.

**13.04.600 Repeal.**

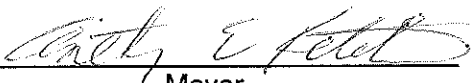
Ordinance No. 695-B, passed the 13<sup>th</sup> day of August, 2001; and Ordinance No. 741-B, passed the 14<sup>th</sup> day of April, 2003, codified in the Chehalis Municipal Code as Chapter 13.04,

shall be, and the same hereby is, repealed.

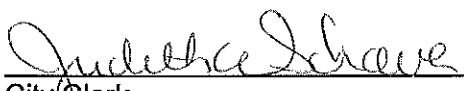
**13.04.610 Effective date.**

The effective date of this ordinance shall be the February 22, 2011.

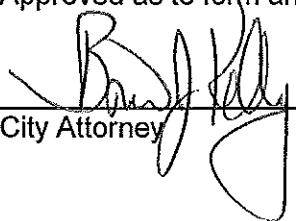
**PASSED** by the city council of the city of Chehalis, Washington, and **APPROVED** by its mayor, at a regularly scheduled open public meeting thereof this 14<sup>th</sup> day of February, 2011.

  
\_\_\_\_\_  
Mayor

Attest:

  
\_\_\_\_\_  
City Clerk

Approved as to form and content:

  
\_\_\_\_\_  
City Attorney



**Appendix E**  
**Water/Sewer/Storm Application Process Guidance**  
**Documents**

## City of Chehalis

### Water/Sewer/Storm Application Process

1. When applying for water, sewer or stormwater services the applicant must know the exact address of the property they are requesting service for.
  - If the address is not known or the property does not have an official address contact either Chehalis Community Services at 360.748.0271 for location(s) within the Chehalis corporate city limits, or Lewis County Planning at 360.740.1146 for location(s) outside of the Chehalis corporate city limits.
2. Determine if service is available:
  - If the proposed service location is within the Chehalis corporate city limits then proceed directly to step # 4. If the proposed service location is outside the Chehalis corporate city limits but within the city's Urban Growth Area (UGA) then proceed directly to step #3.
  - If unsure, please refer to the attached map or contact Chehalis Public Works at 360.748.0238 for additional information.
  - If the proposed service is not within either the city limits or the UGA area, water sewer and storm services are not available except under special circumstances. For additional information please contact the Public Works Department.
  - If the new service requires an utility extension, the Public Works Department must be contacted for an Extension/Connection Fee Estimate and any special extension requirements. Extensions will be allowed as determined by the Director of Public Works and current utility comprehensive and master plans.
3. If the proposed service is within the city's UGA area a Utility Service Annexation Agreement must be obtained from the Public Works Department. The completed annexation agreement must be submitted to the Public Works Department along with the completed Water/Sewer/Storm Application. When completing the Utility Service Annexation Agreement, the applicant must provide the following:
  8. Attach a full legal description (Section, Township, Range) of the property.
  9. Provide the Assessor's Property Tax Parcel Number
  10. Have the Utility Service Annexation Agreement Notarized.

**Note: The above information is available from the Lewis County Assessor's Office at 360.740.1392.**
4. When completing a Water/Sewer/Storm Application, available from the City of Chehalis Public Works Department, the applicant will be required to provide:
  8. The exact address of the proposed service site.
  9. Designation of whether the property is within the Chehalis corporate city limits or the UGA.
  10. The type of service being requested.
  11. The meter size needed (for water service only).

**Note: The city does not make recommendations on meter sizes. It is the responsibility of either the applicant or their representative to determine the appropriate meter size.**

8. Proposed service usage:
    - a. Single family dwelling
    - b. Duplex
    - c. Multiple family dwelling, including total # of units
    - d. Commercial or Industrial
    - e. Temporary construction
    - f. Irrigation
    - g. Fire protection
  9. Water consumption estimates, with calculation figures attached
5. In addition to a completed City of Chehalis Water/Sewer/Storm Application, all Commercial and Industrial applicants are required to complete and attach a Sewer Use Survey for Non-Residential Establishments form. This form is available from the City of Chehalis Public Works Department.
6. After submission of the Water/Sewer/Storm Application, and all other applicable documentation, the Public Works Department will process the application and calculate all appropriate water/sewer charges. These charges may include, but are not limited to:
- Water connection fee *\*see below*
  - Sewer-connection fee *\*see below*
  - Installation charges for water service. (Applicant is responsible for the sanitary side sewer installation and all associated costs).
  - Utility extension fee(s)
  - Late-comer fee(s)
  - Water/Sewer account deposit
- \*Connection fees are a one-time charge based on proposed ERU usage. An ERU is a unit of measure, used for billing purposes, and is based on 300 gallons water and 250 gallons of sewer usage per day. **Connection fees cost several thousand dollars per ERU and must be paid PRIOR to service connection in addition to other applicable fees.***
7. **Latecomer Agreement:** Any person constructing a water or sewer extension or other public improvement in excess of minimum standards and/or the needs of the development may with the approval of City Council enter into an agreement with the city allowing the developer to be reimbursed for the portion of costs benefiting adjoining properties and/or in excess of minimum requirements. The format for a Latecomer Agreement must be submitted for review and approval **prior** to plan approval.
8. Upon completion of the application review process and calculation of the appropriate fees, a Public Works representative will contact the applicant. At this time the applicant will be required to pay **all** associated costs of the Water/Sewer/Storm Application process. Payment must be made at the City of Chehalis Public Works office located at 2007 Kresky Avenue, Chehalis WA 98532.

9. **Note: No guarantee of service will be made by the City of Chehalis, until the application has been determined to be complete and correct, signed by the Director of Public Works or his representative, and all connection fees and applicable charges have been paid.**
10. All approved sewer permit(s) will be mailed to the applicant's mailing address unless other arrangements are requested in writing and the request is attached to the application.

**Additional information:**

- While the time necessary for water service installation varies, the applicant should allow for up to (6) weeks from the date all fees and charges are paid.
- A "Side Sewer Permit" is required in addition to a Water/Sewer/Storm Application when installing a sanitary side sewer. Side Sewer Permits are available at the City of Chehalis Public Works Department.
- A "Right-of-Way" permit must be obtained by a licensed contractor, for all construction work performed within a city right-of-way. Right-of-Way permits are available at the City of Chehalis Public Works Department.
- The Public Works Department must be notified a minimum of two (2) business days *prior* to a sanitary service connection to arrange for a sewer inspection.
- All work must be completed within six (6) months of the approval date on the Water/Sewer/Storm Application. If all work is not completed in this time frame, approval will automatically be rescinded and a new application must be submitted.
- The temporary discharge of liquid waste to the City sanitary system requires the completion of a Water/Sewer/Storm Application. Please contact the Wastewater Superintendent at 360.748.0238 for additional information and requirements.
- All questions regarding monthly water rates should be directed to City Hall at 360.748.6664.

**Appendix F**  
**Application for Services and Fee Schedules**

## Permit Application

**Submit this form and any required attachments to:**

City of Chehalis  
 Community Development Department  
 1321 S. MARKET BLVD.; , CHEHALIS WA 98532  
 (360) 748-0271

**APPLICANT FILL OUT UPPER SECTION:**

**JOB ADDRESS:** \_\_\_\_\_ **DESIRED START DATE:** \_\_\_\_\_

**APPLICANT:** \_\_\_\_\_ **PROPERTY OWNER** (Same as Applicant?  Yes  No;  ROW)

NAME: \_\_\_\_\_ NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ ADDRESS: \_\_\_\_\_

CITY/ST/ZIP: \_\_\_\_\_ CITY/ST/ZIP: \_\_\_\_\_

PHONE#: \_\_\_\_\_ PHONE#: \_\_\_\_\_

**CONTRACTOR** (Same as Applicant?  Yes  No  N/A)

NAME: \_\_\_\_\_ CONTR LICENSE NO: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ EXPIRATION DATE: \_\_\_\_\_

CITY/ST/ZIP: \_\_\_\_\_ PHONE#: \_\_\_\_\_

**CONTACT PERSON** (Same as Applicant?  Yes  No)

**BONDING/INSURANCE COMPANY** ( N/A):

NAME: \_\_\_\_\_ NAME: \_\_\_\_\_

ADDRESS#: \_\_\_\_\_ ADDRESS#: \_\_\_\_\_

CITY/ST/ZIP: \_\_\_\_\_ CITY/ST/ZIP: \_\_\_\_\_

PHONE #: \_\_\_\_\_ PHONE #: \_\_\_\_\_

**DETAILED PROJECT DESCRIPTION:**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

<b><u>Signature of Authorized Representative:</u></b>	<b><u>Date:</u></b>
<b><u>Name (print):</u></b>	<b><u>Telephone #:</u></b>

**OFFICE USE ONLY:**

Date Received: \_\_\_\_\_ By: \_\_\_\_\_ Date Reviewed: \_\_\_\_\_ By: \_\_\_\_\_  
 Parcel #: \_\_\_\_\_ Zoning: \_\_\_\_\_ Flood Zone: \_\_\_\_\_  
 Permit #: \_\_\_\_\_

**Approvals & Additional Information Required**

- |                                      |  |  |
|--------------------------------------|--|--|
| <b><u>Community Development:</u></b> | <input type="checkbox"/> Building, Plumbing, Mechanical, Sign & Demo, Occupancy (1-A)<br><input type="checkbox"/> Cond. Use, Zoning Var. PUD, & Special/Temp (1-C)<br><input type="checkbox"/> SEPA (1-G) <input type="checkbox"/> JARPA (1-H) <input type="checkbox"/> Critical Areas/FHZ | <input type="checkbox"/> Subdivision (1-B)<br><input type="checkbox"/> Short Plat, BLA, Abatement (1-E)<br><input type="checkbox"/> Historic   |
| <b><u>Public Works / Police:</u></b> | <input type="checkbox"/> Utility Service (2-A)<br><input type="checkbox"/> Traffic Impact Analysis<br><input type="checkbox"/> Deferral Agreement<br><input type="checkbox"/> Utility Service Annexation Agreement <input type="checkbox"/> Lewis County Water & Sewer District #4         | <input type="checkbox"/> Right of Way (2-B)<br><input type="checkbox"/> F.O.G Form<br><input type="checkbox"/> Utility Easement<br><input type="checkbox"/> Earthmoving (2-C)<br><input type="checkbox"/> WW Check Valve<br><input type="checkbox"/> Premise Isolation |
| <b><u>City Hall / Fire:</u></b>      | <input type="checkbox"/> Business License<br><input type="checkbox"/> Fire Suppression/Sprinkler   | <input type="checkbox"/> Occupancy Permit<br><input type="checkbox"/> Fire Dept. Turnaround<br><input type="checkbox"/> UST/AST<br><input type="checkbox"/> Additional Hydrant   |
| <b><u>Lewis County:</u></b>          | <input type="checkbox"/> LC Civil Plan<br><input type="checkbox"/> LC Road Name  | <input type="checkbox"/> LC Planning<br><input type="checkbox"/> LC Health (Septic)<br><input type="checkbox"/> LC Health (Well)   |

LC Right of Way/Driveway

**Utility Service Attachment**

**City of Chehalis**

**Public Works Department**

2007 NE KRESKY AVE; CHEHALIS, WA 98532  
(360) 748-0238

**SERVICE REQUESTED**

- |   |  |   |   |
|---|--|---|---|
| <input type="checkbox"/> INSIDE CITY                          | <input type="checkbox"/> OUTSIDE CITY                        | <input type="checkbox"/> SINGLE UNIT RESIDENTIAL            | <input type="checkbox"/> DUPLEX                 |
| <input type="checkbox"/> SEWER                                | <input type="checkbox"/> REPAIR OR REPLACE EXISTING          | <input type="checkbox"/> MULTIPLE - # OF UNITS: _____       | <input type="checkbox"/> COMMERCIAL/INDUSTRIAL  |
| <input type="checkbox"/> WATER (METER SIZE: _____)            | <input type="checkbox"/> LATECOMER AGREEMENT: [ ] YES [ ] NO | <input type="checkbox"/> METER DOWNSIZE FROM _____ TO _____ | <input type="checkbox"/> TEMPORARY CONSTRUCTION |
| <input type="checkbox"/> STORM (IMPERVIOUS AREA: _____ SQ FT) |  |   | <input type="checkbox"/> OTHER _____            |

**CONSUMPTION & DISCHARGE SURVEY**

Primary type of business (list type of operations, identify all activities producing wastewater and all activities using water):

This Facility will use \_\_\_\_\_ gallons per day of water from [ ] Public Water Supply [ ] Private Well [ ] Reclaimed Water  
[ ] Other: \_\_\_\_\_

Estimated Number of gallons per day used for the following purposes (attach documentation demonstrating estimated usage):  
[ ] Non-Commercial Domestic Uses \_\_\_\_\_ GPD [ ] Boilers, Cooling or Other Unpolluted Wastewater \_\_\_\_\_ GPD  
[ ] Non Domestic Activities (not from domestic uses of restrooms, showers, kitchens or laundry rooms) describe: \_\_\_\_\_

Is or will the water be used for any of the following:

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> FILLING TANK TRUCKS OR TRAILERS  | <input type="checkbox"/> FARM            | <input type="checkbox"/> WATER TREATMENT SOFTENER               |
| <input type="checkbox"/> NEW WATER MAIN CONSTRUCTION  | <input type="checkbox"/> HEAT EXCHANGERS | <input type="checkbox"/> IRRIGATION (Landscape or Agricultural) |
| <input type="checkbox"/> FIRE SERVICES (Sprinkler System, etc.)   | <input type="checkbox"/> SOLAR HEATING   | <input type="checkbox"/> OTHER: _____                           |
| <input type="checkbox"/> LABORATORIES (Biological, Chemical, or Environmental, including Schools or Colleges) |  |   |
| <input type="checkbox"/> HOSPITAL, MEDICAL, DENTAL, VETERINARY, NURSING HOME OR MORTUARY                      |  |   |

Wastewater from this facility goes to the (check all that apply) [ ] Sanitary Sewer [ ] Storm Sewer [ ] Ground (drain field, etc)  
[ ] Waste Haulers [ ] Open water, rivers, ocean [ ] Evaporation [ ] Other: \_\_\_\_\_

Stormwater from this facility goes to (list): \_\_\_\_\_

Chemicals used/stored on premises: [ ] in drums [ ] small containers [ ] no chemicals stored

Materials, chemicals, products, equipment, or wastes [ ] are [ ] are not stored in outside areas.

This Facility: [ ] does [ ] does not generate dangerous waste. Generator WAD# \_\_\_\_\_ (if assigned)  
[ ] does [ ] does not have an oil-water separator.  
[ ] does [ ] does not wash vehicles or equipment on the premises (if so water goes to \_\_\_\_\_).  
[ ] does [ ] does not exceed 3 stories or 33 feet in height above the water main.

I understand and agree to pay all costs fees and charges associated with water, sewer and/or storm sewer construction and connection before water and/or sewer service shall be provided.

I agree to allow the city to temporarily discontinue the service at any time without notice to the customer and will hold the city harmless for any damage caused by interruption, change or failure of the water, sewer and/or storm sewer supply, and for any damage by water or other cause resulting from defective plumbing or appliances on the premises supplied with water installed by the owner or occupant of the premises. I further agree that such failures or interruptions for any reasonable period of time shall not be held to constitute a breach of agreement on the part of the city or in any way relieve the customer from performing the obligations of this or subsequent agreements.

I agree to abide by the city rules and regulations as contained in the city water, sewer and storm water ordinances, and agree to pay for the utility service as determined by the Public Works Department as specified in the city ordinances.

A contract is not entered into between the applicant and the Public Works Department until after a city representative issues the approval and all monies are paid. Approval shall be rescinded if the work has not been completed within six (6) months of the date of approval of this application.

**I have personally examined and am familiar with the information submitted in this document and any attachments. I believe the submitted information is true, accurate and complete. I understand the penalty for submitting false information includes the possibility of fines and/or imprisonment.**

Signature of Authorized Representative: \_\_\_\_\_ Name (print): \_\_\_\_\_ Date: \_\_\_\_\_ Telephone #: \_\_\_\_\_

Applications must be signed as follows: Corporations, by a principle executive officer of at least the level of Vice President; partnership by a General Partner; sole proprietorship by the Proprietor, (ref: 40 CFR Part 403.12 (1))

**DISCLOSURE:** Title 40 of the Code of Federal Regulations Part 403.14 requires information provided in this questionnaire identifying the nature and frequency of discharge to be available to the public without restriction. Requests for confidential treatment of other information shall be governed by procedures specified in 40 CFR Part 2 and applicable State Law. Should a discharge permit be required for your facility, this information may be used to issue the permit. Washington State DOH Cross Connection Control (CCC) Regulations, WAC 246-290-490 and Chapter 10 of the Uniform Plumbing Code identify requirements related to the City's CCC program.

Allow up to six (6) weeks for service installation from the date all charges are paid. The Public Works Department **MUST** be notified at least two (2) business days prior to sewer connection to arrange for inspection. The applicant is responsible for installation of sanitary side sewer and all associated costs.



**SIDE SEWER REPLACEMENT/INSTALLATION INFORMATION**

1. **PERMITS REQUIRED:** *Prior to performing any work permit approval **MUST** be issued.* A RIGHT-OF-WAY PERMIT is required for all work within the city right-of-way. The applicant is responsible for any additional permits that may be required. The applicant must call **Underground Utilities Locate, 1-800-424-5555** 48 hours prior to the start of any work, as required by State law.
2. **INSPECTIONS:** The following inspections are required: **Preliminary Inspection**, when connection is made to the sewer main or manhole, for testing **prior** to covering any work, or where special conditions exist as determined by the Director of Public Works. The Public Works Department must be notified 48 hours **prior** to inspection. If additional inspections are necessary due to failure to comply with any specifications or provisions, or due to failure of a test of the side sewer; a \$10.00 fee will be charged for each additional inspection.
3. **SPECIFICATIONS:** All work must conform to all City of Chehalis, Lewis County and State of Washington regulations as applicable. The permit holder must also comply with all construction specifications delineated in the Chehalis Municipal Code as well as provisions that may be required as indicated on this permit.
4. **PIPE MATERIALS:** Polyvinyl Chloride (PVC) – ASTM D3034 SDR 35 with flexible gasket joints. All joints and connections will be gas tight and watertight and conform to ASTM D3212.
5. **CONNECTIONS TO PUBLIC SEWER:** The connection of a side sewer to the public sewer will be made at a wye or tee branch. All other connections must be made by a qualified plumbing contractor, licensed and bonded by the State of Washington and approved by the Director of Public Works. An approved transition adaptor must be used to connect the side sewer to the wye or tee. Connection to the building drainpipe will be made by means of a flexible clamp-type coupling or other approved methods. Connections to manholes or other facilities will be allowed only if approved by the Director of Public Works.
6. **SIZE OF SIDE SEWER PIPE:** Side sewers for single-family residences will be no less than four (4) inches in diameter. Side sewers for all other buildings will be no less than six (6) inches in diameter.
7. **SLOPE OF SIDE SEWER:** Four (4) inch diameter side sewers will be laid on a uniform slope of not less than 1/4" per foot. Six (6) inch diameter side sewers will be laid on a uniform slope of not less than 3/16" per foot.
8. **SIDE SEWER FITTINGS AND CLEANOUTS:** Side sewers will be laid at uniform grade and in straight horizontal alignment insofar as possible. No ninety degree bends will be allowed. Two bends may be allowed between cleanouts provided the distance between cleanouts does not exceed twenty (20) feet. A cleanout will be installed between thirty (30) and thirty-six (36) inches of all buildings. In no case will the distance between cleanouts exceed 100 feet. All cleanouts will be properly plugged. A test tee must be provided at the connection to the public sewer.
9. **MECHANICAL LIFTING DEVICES REQUIRED:** If mechanical lifting devices are required, the applicant must submit plans, diagrams and details to the Director of Public Works for review and approval.
10. **LAYING OF PIPE:** The bottom of the trench will be smooth and free from large rocks or other rough material. A minimum of four (4) inches of bedding sand or fine smooth gravel is required. All pipe will be laid true to grade with bell upgrade.
11. **TESTING:** The entire length of side sewer must be tested for visible leakage before backfilling, by inserting a removable plumber's plug at the test tee and filling the line with water to a level of at least one (1) foot above the top of the side sewer at its connection with the building drain. The side sewer pipe must be filled with water at least one (1) hour before actual inspection.
12. **SIDE SEWER INSPECTION RESPONSIBILITY:** It is the duty of the permit holder to make sure that the work will pass all inspection.
13. **BACKFILLING:** Backfilling will not commence until a representative from the Public Works Department has performed an inspection. Any portion of the side sewer covered prior to inspection will be uncovered at the permit holder's expense within two (2) days after notice to do so. Trenches will be carefully backfilled by tamping sand or other approved material to a depth of six (6) inches above the pipe to avoid damaging the pipe. All backfill material between the public sewer and the property line must be approved by the Director of Public Works, water-settled or mechanically tamped in six-inch layers to minimize settlement. Any settlement occurring within twelve months of backfilling will be corrected at the expense of the permit holder.
14. **WATER NOT TO BE DISCHARGED INTO SEWER:** Stormwater, surface water, ground water, roof runoff, subsurface drainage, cooling water or unpolluted industrial process waters will not be discharged to any sanitary sewer.
15. **WATER METER INSTALLATION ON DOMESTIC LINE:** If sewer service is installed without water service a water meter must be installed on the domestic water line. Sewer billing is based on water usage; sewer billing cannot be properly calculated without the meter installation.

**NOTE:**

This permit will be null and void ninety, (90)-days from the date of this application. If there are conflicts between specifications and requirements contained herein or in any other City, County or State laws or regulations or permits, the more stringent ruling will apply.

All questions regarding these or other applicable requirements should be directed to the City of Chehalis Public Works Department – 2007 NE Kresky Avenue, Chehalis WA 98532; Phone: 360.748.0238, Fax: 360.748.0694.



**Water and Sewer Connection Fees**

(Effective February 15, 2005)

**Water Capital Facilities Charge:**

(Call for pricing of meters larger than 2")

3/4" meter: \$ 2,071      1 1/2" meter: \$ 10,353      1" meter: \$ 5,177      2" meter: \$ 16,565

**Sewer Capital Facilities Charge per ERU:**

(1 ERU = 250 gallons/day)      \$ 3,030

**Storm water Capital Facilities Charge per ESU:**

(1 ESU = 3000sq ft impervious)      \$ 489

**Installation Fees (Water):**

<u>Service Size</u>	<u>Meter Size</u>	<u>Cost</u>
3/4"	5/8" x 3/4"	\$ 700
1"	1"	\$ 1,000
1 1/2"	1 1/2"	\$ 1,500
2"	2"	\$ 2,000

**Note:** These fees must be paid prior to the meter being installed. The actual cost of the installation may vary. Excess costs will be billed separately.

**Fire Service Connection Fees:**

<u>Service Size</u>	<u>Cost</u>	<u>Service Size</u>	<u>Cost</u>
2"	\$ 1,610	8"	\$ 16,060
3"	\$ 3,210	10"	\$ 23,090
4"	\$ 5,020	12"	\$ 45,170
6"	\$ 10,040		

**Note:** These costs are for most common connections and **do not** include any other **additional fees** that may be associated with connecting to the public system. Some service areas are restricted in water and/or sewer capacity making utility service limited or non-existent. Consult the Public Works Department staff for more information on other potential fees and utility availability.

**Utility Service Charge Policy**

**POLICY:** It is the intent of this policy to define the procedure for initiating charges for water and/or sanitary sewer service(s) for new utility accounts.

**RESPONSIBILITY:** The Public Works Director, in conjunction with the Administrative Services Director, shall be responsible for ensuring that this policy is followed.

**PROCEDURES:** After an applicant for either water and/or sewer service(s) has paid all costs and charges associated with the service(s) requested, the City will begin billing for such water and/or sewer services when either of the following conditions occur:

1. When water service becomes available through the installation of a water meter, or;
2. When sewer service becomes available through the installation of a sewer lateral, or;
3. Six months has passed from the date of payment of connection fees.

Such billings shall include appropriate base charges (dependent upon the size of service) in addition to any usage charges that may be applicable.

In cases where the six-month timeline has expired but provision of utility services has not yet occurred, the applicant can request a single, one-time six-month extension. This extension request must be made in writing to the Director of Public Works. Upon lapsing of the six-month deadline (or the six-month extension), the start of utility billing can be delayed by requesting a refund of previously paid connection fees. If this option is chosen, the applicant will forfeit all entitlements to utility capacity and service will need to be reapplied for and purchased at such a time, as it is desired.

If water and sewer service for a property are pursued individually, the city will not reserve capacity in either utility until such time as it has been approved and paid for. In other words, having water service allocated to a property does not guarantee the applicant adequate sewer capacity if sewer service has not yet been paid for and vice versa. It is the applicant's responsibility to ensure that the necessary utility capacity is available to serve their proposed usage.

**Appendix G**  
**Thousand Trails Water Service Agreement**

WATER SERVICE AGREEMENT

THIS AGREEMENT, made and entered into this 22nd day of August, 1983, by and between CITY OF CHEHALIS, WASHINGTON, a Municipal corporation, herein called City, and THOUSAND TRAILS, INC., a Washington corporation, herein called User,

W I T N E S S E T H:

WHEREAS, City has heretofore been providing to User untreated water for domestic use from the City's raw water transmission line, and

WHEREAS, the parties are desirous of contracting the fees and charges User is to pay for said raw water, Now, Therefore,

For and in consideration of the mutual covenants and promises herein contained, and other valuable consideration, the parties agree:

1. City agrees to provide and sell to User, pursuant to the terms and provisions of this Agreement, untreated water for domestic purposes from the City's raw water transmission line.
2. All water sold hereunder shall be metered by a one inch meter which has previously been installed at User's place of business. User shall pay to City for the purchase of water a monthly fee and charge to be computed as follows:

First 1,350 cu.ft.	-	\$12.04
Next 2,400 cu.ft.	-	.60 per 100 cu.ft.
Next 18,000 cu.ft.	-	.57 per 100 cu.ft.
Next 55,000 cu.ft.	-	.54 per 100 cu.ft.
All Additional Consumption	-	.52 per 100 cu.ft.

Said fees and charges shall be paid on or before the 20th day after date of billing.

3. User shall install, own and operate its own water filtration facility pursuant to applicable government statutes, rules and regulations.

4. City makes no representations as to the amount of water available from the raw water transmission line, the

amount of water pressure or the quality of the water therein. User agrees to hold City harmless from any and all liability of every kind and nature for personal injury, sickness, death or property damage that may result by reason of User's use of water purchased from City.

6. User shall pay the full cost of all maintenance, repair and replacement of pipes and laterals used for water transmission from the point the same connects with the City's raw water transmission to User's premises.

7. The provision of water pursuant to this Agreement may from time to time be interrupted either by the City or by reasons beyond the control of City. In the event of such interruption by the City for repairs or maintenance to the raw water transmission line, City shall notify User of such interruption not less than twenty-four (24) hours prior to such interruption. In the event interruption of water service shall be for a reason beyond the control of City, City shall have no responsibility or liability for lack of notification of such interruption.

8. This Agreement may be terminated by either party hereto. If terminated by City for any reason other than non-payment of water service charges, such termination shall be effective on the ninetieth (90th) day after written notice of such termination is served upon User by City. In the event termination is for non-payment of fees and charges provided herein, termination shall be effective on the fifteenth (15th) day after written notification thereof is served on User by City. In the event termination is by User, such termination shall be effective on the thirtieth (30th) day after service of written notification thereof to City.

9. All notice required hereunder shall be in writing and be served on either party by personal service or by certified mail, postage prepaid, return receipt requested. The effective day of such service shall be the date of personal service thereof or the date of posting of said certified mail. Personal service may be effected upon any officer or resident manager of User or upon the City Manager or Water-Sewer Superintendant of City.

10. The terms and provisions of this Agreement may be amended from time to time by the parties. It is contemplated that the fees and charges provided herein shall be changed periodically by City. Any such change shall be predicated upon a change in the cost of providing water to User.

This Agreement is made in contemplation of Ordinance No. 203-B of the City of Chehalis, Washington, providing for the operation and regulation of the public water system of the City. In the event any of the terms and provisions of this Agreement shall be in conflict with said ordinance, the terms and provisions of said ordinance shall control.

Executed in duplicate in the date and year first above written.

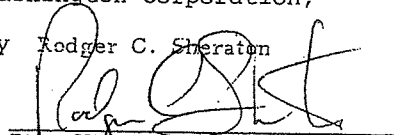
CITY OF CHEHALIS, WASHINGTON,  
a Municipal corporation,

By

  
Its City Manager

THOUSAND TRAILS, INC., a  
Washington corporation,

By Rodger C. Sheraton

  
Its Vice President,  
Construction & Engineering

RECEIVED  
NOV 6 1978  
CHEHALIS CITY CLERK

PERSONAL SERVICES AGREEMENT

THIS AGREEMENT made and entered into this 30th day of October, 1978, by and between THOUSAND TRAILS, INC., a Washington corporation, a division of Pacific Rim Group, Inc., a Washington corporation, herein called Owner, and CITY OF CHEHALIS, WASHINGTON, a Washington corporation, herein called City,

WITNESSETH:

WHEREAS, Owner has constructed a water purification plant for the filtering and distribution of water for domestic purposes upon Owner's development in Lewis County, Washington, and

WHEREAS, City has heretofore agreed to sell to Owner raw water for domestic purposes from City's north fork waterline, and

WHEREAS, Owner is desirous of training its employees as water filter plant operators in order that it may meet regulations of the Washington State Department of Social and Health Services for water filter plant operation, and

WHEREAS, City has agreed to oversee the operation of Owner's water filter plant and the training of Owner's employees as water filter plant operators until said employees can qualify pursuant to state regulations, now, therefore,

For and in consideration of the mutual covenants and promises herein contained, and other valuable consideration,

THE PARTIES HERETO DO HEREBY AGREE as follows:

1. City does hereby agree to oversee the operation and maintenance of Owner's water filtration plant situate upon Owner's development in Lewis County, Washington. Said services shall include sampling and testing of water and training of employees during their qualification as water filter plant operators pursuant to standards established by the Washington State Department of Social and Health Services.
2. Owner does hereby agree to pay to City for the services

rendered hereunder by employees of the City the actual cost of labor and benefits paid to, or on behalf of, employees of the City, including transportation for use of city or employee vehicles from the City public works complex to Owner's development, and return, plus an overhead charge of 20% of said cost of labor, benefits and transportation. In addition to payment for said labor and transportation costs, Owner agrees to reimburse the City for all parts, materials and supplies at the cost thereof to the City plus an overhead charge of 20%. City shall send statements of all charges for services rendered hereunder and materials furnished hereunder to Owner on or before the 30th day of each month. Owner agrees to pay said statement of charges to City on or before the 10th day of the month next succeeding the month said services were rendered or materials furnished.

3. Owner does hereby agree to hold City harmless from any and all liability of every kind and nature which may occur by reason of the operation of Owner's water filter plant or by reason of the furnishing of personal services hereunder by City.

4. This agreement may be terminated at any time by either of the parties hereto, provided however, written notice of such termination shall be furnished to the nonterminating party not less than fifteen (15) days prior to the effective date of such termination.

EXECUTED IN DUPLICATE on the date and year first above written.

THOUSAND TRAILS, INC., a Washington corporation, a division of Pacific Rim Group, Inc., a Washington corporation,

By [Signature]  
Its President

Attest [Signature]  
Owner [Signature]  
Its City Manager

CITY OF CHEHALIS, WASHINGTON, a Washington corporation

By [Signature]  
Its City Manager

**Appendix H**  
**City of Chehalis Wastewater Facilities Plan Excerpt**



**APPENDIX J**  
**SECTION III**  
**EFFLUENT LIMITATIONS**  
**AND**  
**RECLAIMED WATER STANDARDS**

**BACKGROUND**

This Section will present information regarding standards and regulations which must be met for the new plant to discharge treated effluent to the Chehalis River during wet weather conditions, as well as, use of Class A reclaimed water for poplar tree irrigation and groundwater recharge during dry weather conditions. The Consent Decree established discharge parameters for wet weather conditions which are included in the City's NPDES Permit. Since the City will not continue to discharge treated effluent to the river during dry weather conditions, no discussion of the NPDES Permit requirements for dry weather discharge will be included in this report. The requirements for groundwater recharge with Class A reclaimed water will be included in a new NPDES or State Waste Discharge Permit issued jointly by DOE and DOH.

**FINAL EFFLUENT LIMITATIONS (wet weather)**

Final effluent limitations are conditioned on flow-based criteria specified in the Consent Decree. The flow-based criteria specify wet weather and dry weather flow conditions as a function of river flow.

In general, flow in the Centralia Reach shall be determined by the USGS Grand Mound gage using the following conversion equation:

$$y = 0.7396 x - 28.28$$

y is the flow, in CFS, in the Centralia Reach

x is the flow of the Chehalis River, in CFS, as measured at the Grand Mound gage.

CFS means cubic feet per second

"Dry weather" limits apply on the next day after the seven (7)-day moving average flow goes below 1,000 CFS and on all subsequent days until the "wet weather" limits apply. "Wet weather" limits apply when the seven (7) day moving average flow goes above 1,000 CFS and at least one of the previous seven days of flow was equal to or greater than 2,500 CFS.

Dry weather limits for ammonia go into effect 14 days after the seven (7)-day moving average flow is less than 1,000 CFS, provided that the 14-day phase-in period is triggered no earlier than March 1 of each year (hence, March 15 is the earliest date that the dry weather limits for ammonia will apply).

Final effluent limitations will take effect (according to the Consent Decree schedule) in January 2008 (or up to 2010 if an extension is granted). Final effluent limitations for wet weather conditions apply to the current outfall location. The final metal discharge limits may be modified or eliminated in the future pending the findings of further metal studies, which include a multi-faceted Comprehensive WER Study, currently nearing completion. Until this work is completed, the interim effluent limitations will be in effect. Tables III-1 and III-2 present a summary of final wet weather limits.

<b>TABLE III-1 FINAL EFFLUENT LIMITATIONS (Wet Weather Flow-based)</b>		
<b>Parameters</b>	<b>Monthly Average</b>	<b>Daily Maximum</b>
BOD <sub>5</sub>	30 mg/l, 732 lbs/day	45 mg/l, 2,330 lbs/day
TSS	30 mg/l, 768 lbs/day	45 mg/l, 2,330 lbs/day
Ammonia	-	15 mg/l, 644 lbs/day
<b>Parameters</b>	<b>Monthly Average</b>	<b>Weekly Average</b>
Fecal Coliform Bacteria	200/100 mL	400/100 mL
pH	shall not be outside the range of 6.0 to 9.0	

**Plant Flow, Daily Maximum 13.0 MGD**

Note: The monthly average effluent concentration of BOD<sub>5</sub> and TSS shall not exceed 30 mg/l or 15% of the respective monthly average influent concentrations, whichever is more stringent. The 15% TSS limit may be increased if the City can document several conditions as noted in WAC 173-221-050(4)(a)(i).

Parameters	Monthly Average	Daily Maximum
Copper	10.9 µg/l	12.0 µg/l
Silver	1.29 µg/l	1.41 µg/l
Zinc	78.3 µg/l	85.9 µg/l

The Consent Decree allows the City to seek relief from the 85% TSS removal requirement based on WAC 173-221-050. I/I removal projects are also postponed until the City has funded the new treatment plant, because the City's sewer rates are currently above the hardship level (1.5% of median household income). DOE has indicated that they are willing to extend the interim 65% removal limit for TSS during wet weather conditions until such time as the City has removed enough I/I to meet the 85% TSS removal limit. Section VI of the GSP presents a schedule for I/I removal and the year in which the 85% TSS removal limit is expected to be met. This issue needs to be discussed with DOE in greater detail as the NPDES Permit for the final limits is being prepared and after the new treatment plant has established an operational history.

### **APPLICABLE RECLAIMED WATER STANDARDS**

#### *Water Reclamation and Reuse Standards (September 1997)*

The Reclaimed Water Act of 1992 (RCW 90.46) requires DOE and DOH to prepare Water Reclamation and Reuse Standards by which treated wastewaters can be reused to meet certain water demands in lieu of using potable water. These standards were adopted in 1997.

Classes of reclaimed water and reuse options: The Standards define four classes of reclaimed water, namely A through D, in descending order of purity. The higher classifications allow a wider range of reuse options. Table III-3 of the Standards lists the allowed uses for each class of reclaimed water (attached at end of this section). Class A is the highest standard and requires that the treated wastewater be oxidized, coagulated, filtered and disinfected. "Oxidized" means, the process by which the organic matter in the wastewater has been stabilized such that the BOD<sub>5</sub> and TSS are less than 30 mg/l, is non-putrescible and contains dissolved oxygen. "Coagulation" is the step of adding chemicals to aide in filtration by agglomeration. "Filtered" is based on a turbidity of two

(2) nephelometric turbidity units (NTU) monthly average and five (5) NTU at any time. Class A reclaimed water needs to be disinfected such that the median number of total coliform organisms does not exceed 2.2 per 100 ml for the last seven days of samples and 23 per 100 ml for any sample. The Standards also specify requirements for the submission of Engineering Reports for proposed reuse projects, operational requirements, general design requirements, reliability requirements, and use area requirements.

The GSP recommends that the City produce Class A reclaimed water during dry weather conditions that will be used for poplar tree irrigation and groundwater recharge via surface percolation. Groundwater recharge by surface percolation is specifically allowed under Article 3 of the Reuse Standards. The reclaimed water must be Class A and include an additional step for nitrogen reduction such that the total nitrate concentration is less than 10 mg/l by the time the reclaimed water meets the groundwater. An industrial wastewater pretreatment program is also required to assure protection of the groundwater.

Class A reclaimed water also has many other uses including irrigation, car washes, impoundments, toilet flushing, dust control at construction sites, street cleaning, etc. Many of these other uses are consumptive uses that can be used in lieu of potable water. Table III-3 lists the potential uses for reclaimed water.

In reuse approach proposed in this plan, the reclaimed water is applied to poplar trees at a greater than agronomic rate, resulting in groundwater recharge. Class A reclaimed water is required for this use. However, if the trees are to be irrigated at strictly agronomic rates, then only Class D reclaimed water is required. Class D requirements call for effluent that is oxidized and disinfected. The disinfection requirement is that the median number of total coliform organisms does not exceed 240 per 100 ml for the last seven days.

The poplar trees have both a nitrogen and water agronomic rate. A conservative nitrogen agronomic rate used in this report is 250 pounds/acre/year. The water agronomic rate used in this report is 0.25 acre-inch/day over a 200-day growing season which equates to 1.36 million gallons per acre per growing season.

**Table III-3  
Treatment and Quality Requirements for Reclaimed Water Use**

USE	Class A	Class B	Class C	Class D
<b><i>Irrigation of Nonfood Crops</i></b> Trees and Fodder, Fiber, and Seed Crops Sod, Ornamental Plants for Commercial Use, And Pasture to Which Milking Cows or Goats Have Access	Yes	Yes	Yes	Yes
<b><i>Irrigation of Food Crops</i></b> Spray Irrigation All Food Crops	Yes	No	No	No
Food Crops Which Undergo Physical or Chemical Processing Sufficient to Destroy All Pathogenic Agents	Yes	Yes	Yes	Yes
Surface Irrigation Food Crops Where There is No Reclaimed Water Contact With Edible Portion of Crop	Yes	Yes	No	No
Root Crops	Yes	No	No	No
Orchards and Vineyards	Yes	Yes	Yes	Yes
Food Crops Which Undergo Physical or Chemical Processing Sufficient to Destroy All Pathogenic Agents	Yes	Yes	Yes	Yes
<b><i>Landscape Irrigation</i></b> Restricted Access Areas (e.g., Cemeteries and Freeway Landscapes)	Yes	Yes	Yes	No
Open Access Areas (e.g., Golf Courses, Parks, Playgrounds, Schoolyards, and Residential Landscapes)	Yes	No	No	No
<b><i>Impoundments</i></b> Landscape Impoundments	Yes	Yes	Yes	No
Restricted Recreational Impoundments	Yes	Yes	No	No
Nonrestricted Recreational Impoundments	Yes	No	No	No
<b><i>Fish Hatchery Basins</i></b>	Yes	Yes	No	No
<b><i>Decorative Fountains</i></b>	Yes	No	No	No
<b><i>Flushing at Sanitary Sewers</i></b>	Yes	Yes	Yes	Yes
<b><i>Street Cleaning</i></b> Street Sweeping, Brush Dampening	Yes	Yes	Yes	No
Street Washing, Spray	Yes	No	No	No
<b><i>Washing of Corporation Yards, Lots, and Sidewalks Dust Control (Dampening Unpaved Roads and Other Surfaces)</i></b>	Yes	Yes	No	No
<b><i>Dampening of Soil for Compaction (at Compaction Sites, Landfills, Etc.)</i></b>	Yes	Yes	Yes	No
<b><i>Water Jetting for Consolidation of Backfill around Pipelines</i></b> Pipelines for Reclaimed Water, Sewage, Storm Drainage, Gas, and Conduits for Electricity	Yes	Yes	Yes	No
<b><i>Fire Fighting and Protection</i></b> Dumping from Aircraft	Yes	Yes	Yes	No
Hydrants or Sprinkler Systems in Buildings	Yes	No	No	No
<b><i>Toilet and Urinal Flushing</i></b>	Yes	No	No	No
<b><i>Ship Ballast</i></b>	Yes	Yes	Yes	No
<b><i>Washing Aggregate and Making Concrete</i></b>	Yes	Yes	Yes	No
<b><i>Industrial Boiler Feed</i></b>	Yes	Yes	Yes	No
<b><i>Industrial Cooling</i></b> Aerosols or Other Mist Not Created	Yes	Yes	Yes	No
Aerosols or Other Mist Created (e.g. Use in Cooling Towers, Forced Air Evaporation, or Spraying)	Yes	No	No	No
<b><i>Industrial Products</i></b> Without Exposure of Workers	Yes	Yes	Yes	No
With Exposure to Workers	Yes	No	No	No

# **Appendix I**

## **Development Engineering Standards**

## **Article I. In General**

### **12.04.010 Adoption.**

A. The document entitled “Chehalis Development Engineering Standards” dated July 11, 2005, is adopted and made a part of this chapter. (Said document revises and replaces the prior public works standards.)

B. Said document shall be used to provide consistent guidance to developers and property owners interested in developing or improving properties within the city, its urban growth area, and other associated service area boundaries. Said document shall delineate development processes, standards and requirements related to public utilities and infrastructure as established by city policies, codes and other adopted standards. [Ord. 785B § 14, 2005; Ord. 739B, 2003.]

### **12.04.020 Administration – Enforcement.**

The administration and enforcement of this chapter, and the regulations adopted hereby, shall be as specified and provided within the adopted regulations. [Ord. 739B, 2003.]

### **12.04.030 Modification.**

A. As regulations change or are enacted and conditions dictate, it is recognized that this document will have to be modified and changed from time to time to reflect the needs or requirements of the city.

B. Periodically, the public works director shall conduct a review and evaluation of conditions and standards. When it is determined that changes to this document are in order, the public works director shall present recommended changes to the city council for its consideration. [Ord. 739B, 2003.]

### **12.04.040 Standards.**

The city adopts, by reference, “The Standard Specifications for Municipal Public Works Construction,” prepared by the Washington State Department of Transportation and the Washington State Chapter of the American Public Works Association as now enforced, or hereafter amended, as the official specifications for municipal public works construction for the city, and incorporates such standard specifications into the development engineering standards adopted by this chapter. [Ord. 739B, 2003.]

## **Article II. Administration**

### **12.04.050 Applicability.**

The guidelines and standards addressed in this document will apply to construction and improvement activities that take place within the right-of-way, or that impact the water, sanitary sewer, storm sewer, sidewalk, street or transportation system, or other such activities within the city of Chehalis and the urban growth area (UGA) (see definitions). These standards will be considered reasonable minimum regulations unless a variance request is granted by the director of public works.

At this time, the city has no permitting, inspection or regulatory authority over the activities within the UGA except as they pertain to water and sewer service. However, the guidelines and standards addressed in this document are still applicable to



development projects affecting public utilities and infrastructure within the UGA. In addition, the guidelines may be enforced at the time of annexation by the city for all new construction and improvement projects undertaken when these standards were in effect. An exception may be made if the nonconforming utility or infrastructure remains under private ownership rather than being accepted by the city.

These guidelines and standards will prevail in the event a conflict is found or identified with any other city practice or policy. [Ord. 785B § 14 (1.01), 2005.]

#### **12.04.060 Definition of terms.**

“Annual average daily traffic (AADT)” means daily traffic that is averaged over one calendar year.

“APWA” means the American Public Works Association.

“Average daily traffic (ADT)” means the average number of vehicles passing a specified point during a 24-hour period.

“AWWA” means the American Water Works Association.

“Bond/surety” means any document, instrument, or individual bound with and for the acceptable performance, execution, and completion of the work, and for the satisfaction of all obligations incurred.

Boulevard. See “street, boulevard.”

“Building sewer” means the portion of the line beginning two feet outside the outer foundation wall of the structure and extending to the curb line or edge of pavement. It will have no other common sewers discharging into it. The building sewer is owned and maintained by the property owner.

“Chehalis Municipal Code (CMC)” means the document which includes the laws and ordinances that govern the city of Chehalis as adopted by the city council.

“City” means the city of Chehalis.

Commercial Collector. See “street, commercial collector.”

“Community development director” means the community development director or duly authorized representative for the city of Chehalis.

“County” means Lewis County.

“Cul-de-sac” means a street with a single common ingress and egress and with a circular turnaround at the end.

“Dedication” means the deliberate appropriating of land by an owner(s) for any general and public uses, reserving to themselves no other rights than such as are compatible with the full exercise and enjoyment of the public uses to which the property is to be devoted. The intent to dedicate will be evidenced by the owner by the presentment for a filing of a final plat, short plat, or binding site plan that shows the dedication thereon. Acceptance by the public will be evidenced by written approval issued by the city of such document for filing with the county auditor.

“Deferral” means a temporary delay from the installation of any or all requirements of these standards, issued by the director of public works, based on the site-specific conditions of a project.

“Department of community development” means the department of community development of the city of Chehalis.

“Department of Ecology (DOE)” means the Washington State Department of Ecology.

“Department of Health (DOH)” means the Washington State Department of Health.

“Department of Transportation (DOT or WSDOT)” means the Washington State Department of Transportation.

“Developer” means the applicant for any development and/or improvement permit, his successors, and/or assigns.

“Easement” means the right granted by a property owner to another to make lawful and beneficial use of a defined area of their property for a specific purpose, created through an expressed or implied agreement.

“Engineer” or “PE” means any professional engineer, licensed in the state of Washington.

“Engineering division” means the public works department or designated consultant for the city of Chehalis.

“Equivalent residential unit” or “ERU” means the unit used to calculate water and/or sewer capacity or consumption. One equivalent residential unit (ERU) of water equals 300 gallons of water per day. One equivalent residential unit (ERU) of sewer equals 250 gallons of sewerage discharged to the sanitary sewer system per day. For purposes of these standards, ERUs will be allocated as follows:

1. Single-family residence, including mobile homes: one ERU per living unit.
2. Duplex (two-family residence), triplex (three-family residence), fourplex (four-family residence): one ERU per dwelling unit.
3. Residential buildings containing more than four living units, commercial, industrial or other nonresidential customers: one ERU for each estimated 300 gallons of water consumed per day, and/or one ERU for each estimated 250 gallons of sewerage discharged per day.

“Fill permit” means a permit issued by the Chehalis public works department prior to the commencement of any filling, grading, clearing or other land-disturbing activities.

“Fire department” means the city of Chehalis fire department.

Frontage. See “street, frontage.”

“Frontage improvements” means all of the street pavement, curb, gutter, sidewalk, bus shelters, bus pullouts, storm drainage, water and sewer utilities, power and communications cable undergrounding, street trees and street lighting, as specified by these standards, located within any public right-of-way abutting the property boundary of a development.

“Half-street” means a street constructed along an edge of development utilizing half the regular width of the right-of-way serving as an interim facility pending construction of the other half of the street by the adjacent owner.

“Hearing examiner” means one who hears, decides, and adjudicates appeals arising from decisions made by the city.

“Impervious surface” means any surface that cannot be effectively and easily penetrated by water.

“Improvement” means any act that improves the value of public, real and personal property, or that is necessary as a condition of development, including but not limited to: streets and roads complying with the development standards and specifications adopted by the city; public utility and pedestrian facilities; bus pullouts and shelters; streetlights; landscape features; sewer and water lines; bridge structures; storm drainage facilities; and traffic control devices as required to be installed as part of a

subdivision, short subdivision, large lot subdivision, binding site plan or commercial/industrial development.

“Interceptor” means a sewer pipe receiving flow from a number of main or trunk sewers, force mains, etc.

Lateral. See “sewer lateral.”

Local Access. See “street, local access.”

“Local improvement district (LID)” means a public improvement provided to a specific area that benefits that area and that is usually paid for by a special assessment of a defined set of property owners benefiting from the improvement.

Major Arterial. See “street, major arterial.”

“Manual on Uniform Traffic Control Devices (MUTCD)” means the Manual on Uniform Traffic Control Devices, as published and amended by the U.S. Department of Transportation, Federal Highway Administration, as modified by the Washington State Department of Transportation.

Minor Arterial. See “street, minor arterial.”

Neighborhood Collector. See “street, neighborhood collector.”

“Not to scale (NTS)” means the drawing or detail may not be to a specific scale or drawn entirely at a uniform scale.

Planned Unit Development (PUD). A planned unit development (PUD) provides for development using different “site-specific” standards that permit greater flexibility and achieve a more appropriate design (see Chapter [17.39](#) CMC).

“Plans” means the plans, profiles, cross-sections, elevations, details, and supplementary specifications, signed by a professional engineer licensed in the state of Washington and approved by the director of public works, showing the location, character, dimensions, and details of the work to be performed.

“Private sewer” means any portion of the sewer conveyance system or lines connected thereto, located on private property where no easements are granted to the city. Maintenance of a private sewer will be the responsibility of the property owner(s).

“Private street” means a privately owned and maintained vehicular access tract serving private property.

“Project” is a general term encompassing all phases of the work to be performed and is synonymous with the term “improvement” and/or “work.”

“Public sewer” means that portion of the sewer conveyance system located within the public rights-of-way or easements that are owned, operated and maintained by the city.

“Public street” means a publicly owned and maintained street.

“Public works department” or “department of public works” means the city of Chehalis public works department.

“Public works director” or “director of public works” means the director of public works, or duly authorized representative, for the city of Chehalis.

“Redevelopment” means any project designed to renew, restore, or revitalize an existing building, property or street.

“Right-of-way (ROW)” is a general term denoting public land, property, or interest therein acquired for or devoted to a public street, public access or public use.

“Right-of-way permit” means a permit issued by the city of Chehalis public works department, authorizing disturbance, construction, occupancy or use of a city street or right-of-way.

Road. See “street.”

“Sewer lateral,” “lateral” or “side sewer” means the portion of the service line beginning at the end of the building sewer, typically the curb line or edge of pavement (see “building sewer”) and extending to the sewer main. The sewer lateral is owned and maintained by the city.

“Sewer main or trunk” means a sewer pipe that receives flow from one or more sewer mains and/or building sewers.

Side Sewer. See “sewer lateral.”

“Side sewer permit” means a permit issued by the public works department for the purposes of monitoring and controlling work on sanitary side sewers and delineating specific and general standards and requirements for side sewer work (see “building sewer”).

“Site plan” means a development plan for one or more lots showing the existing and proposed conditions of the lot(s), including topography; vegetation; drainage; floodplains; walkways; means of ingress and egress; circulation; utility services; structures and buildings; signs and lighting; berms, buffers, and screening devices; surrounding development; and any additional information that may be required.

“Standard Specifications” means the most recent edition of the “Standard Specifications for Road, Bridge, and Municipal Construction,” as published by the Washington State Department of Transportation and the Washington State Chapter of the APWA, including “Standard Plans for Road, Bridge and Municipal Construction”; along with any amendments made thereto.

“Street” or “road” means a public right-of-way, usually containing improved facilities for transportation and utilities.

“Street, boulevard” means a multi-lane thoroughfare separated by one or more medians. Boulevards provide distinct separation between slower traffic/parking activity and through traffic. Boulevards can serve a variety of land uses. There are no examples of boulevards currently in the city of Chehalis.

“Street, commercial collector” means a street that provides a connection between an arterial street and concentrated industrial and/or commercial land uses. The amount of through traffic is less than that of an arterial, and there is more accessibility to abutting land uses. An example of a commercial collector in Chehalis is N.W. State Avenue.

“Street, frontage” means the area between any lot lines that intersect the boundary of a street right-of-way, or the portion of a lot that directly abuts a street right-of-way.

“Street, local access” means a street that provides access to abutting land uses and serves to carry local traffic to a collector. An example of a local collector in Chehalis is S.E. Washington Avenue.

“Street, major arterial” means a street that provides an efficient direct route for long-distance travel within the region and different parts of the city. A street connecting freeway interchanges to commercial concentrations is classified as a major arterial. Traffic on major arterials is given preference at intersections, and some access control may be considered in order to maintain capacity to carry high volumes of traffic. An example of a major arterial in Chehalis is North National Avenue.

“Street, minor arterial” means a street that provides an efficient direct route for trips of moderate length at a somewhat lower level of travel mobility than major arterials. A street that augments and interconnects with major arterials is classified as a minor

arterial. More emphasis is placed on land access for minor arterials as opposed to major arterials. An example of a minor arterial in Chehalis is S.W. Cascade Avenue.

“Street, neighborhood collector” means a street that distributes and collects traffic within a neighborhood and provides a connection to an arterial or other collector. Neighborhood collectors serve local traffic, provide access to abutting land uses, and do not carry through traffic. Their design is compatible with residential neighborhood centers. An example of a neighborhood collector in Chehalis is S.W. Snively Avenue.

“Surveyor” means any professional land surveyor licensed by the state of Washington.

“Traffic impact analysis (TIA)” means a report analyzing anticipated roadway conditions with and without proposed development, including an analysis of mitigation measures and a calculation of fair share financial contributions.

“Urban growth area (UGA)” means the area outside the city limits that has been designated in the Chehalis comprehensive plan for future annexation into the city of Chehalis.

“Utility” means a company providing public service including, but not limited to, gas, oil, electric power, street lighting, telephone, telegraph, water, sewer, or cable television, whether or not such company is privately owned or owned by a government entity.

“Variance” means a modification of the terms of this chapter that may be granted because of the unusual shape, exceptional topographic conditions or other extraordinary situation or condition in connection with a specific piece of property, where the literal enforcement of this chapter would involve practical difficulties and cause undue hardship unnecessary to carry out the spirit and intent of this chapter. [Ord. 819B § 13, 2007; Ord. 810B § 6, 2006; Ord. 785B § 14 (1.02), 2005; Ord. 767B, 2004.]

#### **12.04.070 Standard specifications.**

Design detail, workmanship and materials will be in conformance with the most recent edition of the “Standard Specifications for Road, Bridge and Municipal Construction,” the “APWA Supplement to Division One,” and the “Standard Plans for Road, Bridge and Municipal Construction,” all written and promulgated by the Washington State Chapter of the American Public Works Association and the Washington State Department of Transportation, except where these standards provide otherwise.

The following specifications will be applicable when pertinent, when specifically cited in the standards, or when required by a higher regulatory authority:

A. Conditions and standards as set forth in the most recent edition of the city of Chehalis water system plan.

B. Conditions and standards as set forth in the most recent edition of the city of Chehalis general sewer plan.

C. Conditions and standards as set forth in the most recent edition of the city of Chehalis storm water management plan.

D. Conditions and standards as set forth in the Chehalis comprehensive plan.

E. Conditions and standards as set forth in the most recent edition of the Chehalis development regulations.

F. Rules and regulations as adopted in the Chehalis Municipal Code.

G. Criteria set forth in the Local Agency Guidelines, as amended and approved by the Washington State Department of Transportation.

H. The most recent edition of the City and County Design Standards for the Construction of Urban and Rural Arterial and Collector Roads promulgated by the City Engineers Association of Washington.

I. U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD), as amended and approved by the Washington State Department of Transportation.

J. DOT Construction Manual, as amended and approved by the Washington State Department of Transportation.

K. Rules and regulations of the State Board of Health regarding public water supplies, as published by the State Department of Health.

L. Conditions and standards as set forth in the most recent issue of the State of Washington Department of Ecology "Criteria for Sewage Works Design."

M. Conditions and standards as set forth by the State of Washington Department of Labor and Industries.

N. Design criteria of federal agencies including the Department of Housing and Urban Development and the Federal Housing Administration.

O. The most recent edition of "A Policy on Geometric Design of Highways and Streets," by the American Association of State Highway and Transportation Officials (AASHTO).

P. The most recent edition of "Pedestrian Facilities Guidebook" by Otak.

Q. Other specifications not listed above as may apply when required by the city of Chehalis.

In the event of any conflict in the provisions or interpretations of the above-listed specifications and/or standards, as they may relate to any issue, the strictest provision or interpretation, as determined by the director of public works, will prevail.

The city of Chehalis development engineering standards will be cited routinely in the text as the "standards." [Ord. 819B § 13, 2007; Ord. 785B § 14 (1.03), 2005.]

#### **12.04.080 Changes to standards.**

From time to time, changes may be needed to add, delete, or modify the provisions of these standards. These standards may be changed and, upon approval of the director of public works, will become effective and will be incorporated into the existing provisions. All changes to the standards will be presented and discussed in an open public forum. [Ord. 785B § 14 (1.04), 2005.]

#### **12.04.090 Severability.**

If any part of these city of Chehalis development engineering standards is found invalid, all other provisions will remain in effect. [Ord. 819B § 13, 2007; Ord. 785B § 14 (1.05), 2005.]

#### **12.04.100 Appeals.**

Appeals of the administrative decisions of the director of public works will be as provided for in CMC [17.09.150](#)(l). Appeals proposing deviations from technical standards must demonstrate the following: (A) no negative impact to public health and safety; (B) no negative impact to the environment; (C) no negative impact on the city's ability to safely and cost-effectively operate and maintain public utilities and

infrastructure; and (D) methods and materials of equal or higher quality to the standard from which deviation is desired. [Ord. 785B § 14 (1.06), 2005.]

#### **12.04.110 Requirements.**

##### **A. Frontage Improvements in General.**

1. Any permit authorizing a development or redevelopment within residential and commercial zones will require that the developer or property owner be responsible for construction or installation of frontage improvements in accordance with these standards. Frontage improvements will not be required at locations where the health, safety, or welfare of the general public or environment will be negatively impacted.

2. Select areas of the city are designated for the mandatory installation of frontage improvements with any development or redevelopment project. Other areas of the city have been identified for deferral of frontage improvements. These specific designations are identified below.

##### **B. Sidewalk, Curb and Gutter.**

1. The installation of sidewalk, curb and gutter will be required of all development projects with frontage on the following streets:

- a. Cascade Avenue;
- b. Chamber of Commerce Way;
- c. Interstate Avenue;
- d. Louisiana Avenue;
- e. Market Boulevard;
- f. Mills Avenue;
- g. Newaukum Avenue (from Riverside Drive to the city limits);
- h. Parkland Drive;
- i. Riverside Drive (from Highway 6 to Newaukum Avenue);
- j. State Avenue (from Chamber of Commerce Way to West Street);
- k. 13th Street (from Parkland Drive to Market Boulevard);
- l. 20th Street;
- m. National Avenue;
- n. Kresky Avenue.

2. The improvements will be installed in such a manner as to provide continuity for future frontage improvements from adjacent properties. When properties are located at the end of a block, the sidewalk, curb and gutter may be installed around the corner of the side street to a logical point of discontinuation, as determined by the director of public works.

3. Sidewalk, curb and gutter installation will be deferred for development projects along all other streets in the city unless one of the following criteria exists:

- a. There is existing sidewalk, curb and/or gutter adjacent to the development property;
- b. There is existing sidewalk, curb and/or gutter along the development property frontage that is damaged or does not meet the current standards;
- c. The development property is within 250 feet of any school or public park property.

##### **C. Streetlights.**

1. The installation of streetlights will be required of all development projects with frontage on the following streets:

- a. Chamber of Commerce Way;
- b. Interstate Avenue;
- c. Louisiana Avenue;
- d. Main Street;
- e. Market Boulevard;
- f. Newaukum Avenue (from Riverside Drive to city limits);
- g. Parkland Drive;
- h. Riverside Drive (from Highway 6 to Newaukum Avenue);
- i. State Avenue (from Chamber of Commerce Way to West Street);
- j. 13th Street (from Parkland Drive to Market Boulevard);
- k. National Avenue;
- l. Kresky Avenue.

2. The improvements will be installed in such a manner as to provide continuity for future frontage improvements along adjacent properties. These accommodations may include the installation of conduit and junction boxes along the extent of the frontage.

3. Streetlight installation will be deferred for development projects along all other streets in the city, unless there are existing streetlights installed along any adjacent properties.

#### D. Exceptions.

1. If, in the opinion of the director of public works, the existing frontage features are properly installed, in good condition, operational, and not hazardous to public health, safety, or welfare, the development will be exempt from frontage improvement standards.

2. When frontage improvements are a continuation of existing improvements that no longer meet current city standards, the proposed improvements may be allowed to maintain continuity if approved by the director of public works.

3. The following types of development will be exempt from the frontage improvement requirements:

- a. Any addition to and/or remodeling of a single-family residence or duplex.
- b. New single-family developments that are not part of contiguous, multiple single-family lots under sole ownership or that do not have existing frontage improvements abutting the property in question.
- c. Any conversion or change in use of a development where the area being converted is less than 1,000 square feet and the change in use is not likely to result in 25 percent more vehicle trips during the peak traffic hours. Trip generation rates will be determined on the basis of the methodology set forth elsewhere in these standards.
- d. Any remodeling of an existing building or development if no change in use or additional gross floor area results and the cost of the improvements or alterations is less than 25 percent of the value of the existing structures on the property.
- e. Any cumulative addition of less than 1,000 square feet of gross floor area to a building or development as it existed on January 1, 2000.

#### E. Deferrals.

1. For all projects that are granted a deferral of any frontage improvement, the property owner of record will be required to enter into an agreement with the city to install the deferred improvements at some future date (refer to subsection (E)(4) of this



section). This agreement will be recorded with the property to ensure the city's ability to enforce the deferral regardless of changes in property ownership and will be enforceable as allowed by law. The property owner will execute and record a covenant document, as supplied by the city, ensuring participation of the subject property owner(s) in the construction of frontage improvements. The agreement will be effective for a period of 10 years from the date of recording, as allowed by RCW 35.42.182.

2. Any redevelopment project, regardless of location, that is necessitated by fire, flood, other natural disaster, or act of the public enemy will be granted a deferral from the installation of frontage improvements under the following conditions:

a. The redevelopment project is of the same size, type, and usage as existed on the property prior to the damage.

b. There are no negative impacts to the health, safety, or welfare of the public or environment that will be created or perpetuated by the delay of the frontage improvements.

c. If the property is located on a street requiring mandatory frontage improvements as defined in these standards, the deferral will be for a period of three years from the time of completion of the redevelopment project. At that time, the property owner will install the deferred improvements.

3. In certain circumstances it may not be appropriate to require the installation of frontage improvements at the time a development occurs. The director of public works may authorize a deferral of any or all required frontage improvements, as defined by these standards, provided one or more of the following conditions are met:

a. The design grade and alignment of the abutting street cannot be determined at the time of construction of the development.

b. The installation of frontage improvements required for the development would create or intensify a hazard to public safety or health.

c. The installation of required frontage improvements would be inconsistent with the city's long-range street or utility master plans.

d. The cost of the frontage improvement construction is greater than 25 percent of the entire development project cost, unless necessary to protect the health, safety, and welfare of the public or environment. (The costs will be calculated by the owner's representative and approved by the director of public works.)

4. The city will initiate deferred frontage improvements under the following specific guidelines:

a. Deferred frontage improvements will be initiated by the city no sooner than three years from the date the deferral is granted, unless the property in question is part of a local improvement district (LID) formed for the purpose of constructing the deferred improvement or a health or safety issue comes to exist as a result of the need for the deferred improvement.

b. If the city or other entity initiates a project in the vicinity of the property where the improvement was deferred, the improvement may be initiated if related to the work that will be performed.

c. The deferral is valid for a period of 10 years. If the improvement is not initiated within that period, the deferral will lapse and the property owner will no longer be bound by the conditions of the deferral. A lapsed deferral does not exclude a

property owner from participation in an LID. [Ord. 819B § 14, 2007; Ord. 785B § 14 (1.07), 2005.]

#### **12.04.120 Variances.**

A. Purpose. Any applicant may seek modification of the provisions of these standards where it appears that extraordinary conditions of topography, access, location, shape, size, drainage or other physical features of the site or adjacent development exist.

B. Application Procedure. Any development plan that includes a request for a variance to one or more of the requirements of these standards must be accompanied by a statement detailing any such variance(s) and the reasons therefor. Variance requests must include the technical aspects of a specific project that necessitates the need for a variance. A variance from the development engineering standards will not be granted based solely on financial or convenience issues. Upon receiving a variance request, the director of public works will review the information presented and make a determination as to the merits of the request. Upon completion of the review, the petitioner will be notified in writing of the director's decision.

C. Conditions. No variance will be authorized that would have the effect of granting a special privilege not shared by other properties in the same vicinity. To grant a variance(s), the director of public works will determine whether the following conditions have been met:

1. There are exceptional or extraordinary circumstances or conditions that apply only to the property referred to in the application and not to other properties in the vicinity. These include, but are not limited to, size, shape, topography, location, or surroundings. The granting of the application is necessary for the preservation and enjoyment of substantial property rights of the petitioner.

2. The granting of the application will not, under the circumstances of the particular case, adversely affect the health or safety of persons residing or working in the neighborhood of the property referred to in the application and will not be detrimental to the public welfare or injurious to property or improvements in the neighborhood or adversely affect the comprehensive plan. [Ord. 819B § 13, 2007; Ord. 785B § 14 (1.08), 2005.]

#### **12.04.130 Latecomers agreements.**

A. Any person who constructs a water or sewer main extension or other public improvement in excess of that which is required to meet minimum development engineering standards and the needs of the development may, with the approval of the city council, enter into a contract with the city which will allow the developer to be reimbursed for the portion of the construction cost that benefits other adjoining properties and/or is in excess of the minimum standards. This contract is commonly termed a "latecomers agreement." The latecomers agreement should be submitted for review prior to plan approval. However, a latecomers agreement may be presented during the project as long as it is presented prior to any water and/or sewer connection application approvals. Latecomers agreements will not be accepted after any water and/or sewer connection application related to the project has been received and the fees paid. Latecomers agreements will be valid for a period of time as established by the Revised Code of Washington (RCW).

B. The developer is responsible for initiating, executing and, after council approval, filing the latecomers agreement. Any application for a latecomers agreement shall contain:

1. A legal description of the applicant's property;
2. A legal description of all benefiting properties;
3. Maps of the applicant's property, the benefiting properties and the location of the improvement and/or improvements;
4. Estimated itemized cost documentation.

C. The city will collect the approved latecomers fee from persons connecting to the water or sewer extension and subsequently forward payment to the developer. The city will only allow the reimbursement of "reasonable" construction costs. [Ord. 819B § 13, 2007; Ord. 785B § 14 (1.09), 2005.]

#### **12.04.140 Standards enforcement.**

A. Plan Review. All plans and reports are to be submitted to the community development department. All necessary easements, dedications, contracts, agreements or bonds will be submitted for review along with the plans. The development review committee (DRC) will check the plans for completeness against the plan checklist. If plans meet the minimum checklist requirements, they will be routed to appropriate city staff and the plan review process will begin. Two plan reviews will be conducted at no additional charge as part of the plan review process.

If plans require a third submittal, additional fees may be levied as established by resolution of the city council. "Third submittal" will mean the third and any subsequent submittals of construction drawings, specifications, drainage calculations or other information requiring additional plan checking pertaining to public facilities or any applicable construction or development in the right-of-way. New review comments provided by the city, not related to changes/corrections from the engineer, will not trigger "third submittal" requirements.

Upon approval of the plans, the engineer will be requested to submit the original drawings for signature by the director of public works, or his duly appointed representative. Approved plans will be returned only to the engineer and only after all applicable fees have been paid. The plan approval will typically be valid for one year. During that time, the project proponent will not be responsible to update the plans in accordance with any new standards that may be developed, other than as necessary to preserve the health and welfare of the public. If a project has not been initiated and substantially completed upon plan expiration, any new requirements that have been adopted by the city will be applicable.

Plans that have been approved more than one year prior to construction beginning (i.e., a preconstruction meeting scheduled and inspection fees paid) will be subject to subsequent review and additional fees may be levied as established for a "third submittal."

B. Inspection. All construction or work within the scope of this code and all construction or work for which a permit is required will be subject to inspection by the public works department or designated consultant or duly appointed designee, in accordance with and in the manner provided by this code.

It is the responsibility of the contractor to notify the engineering division two business days in advance of the commencement of any authorized work. Failure to provide

sufficient advance notice as noted in these standards may lead to a delay in the start of construction. In such cases, the city accepts no liability for construction delays.

All specific tests and inspections required by these standards or necessitated by the unique nature of a project will be performed at the contractor's expense. In addition, one reinspection will be granted at no cost. Noncompliant or unsatisfactory work may result in additional inspection(s) and additional fees as established by resolution.

C. Construction Control. Work performed for the construction or improvement of city streets and utilities, whether by or for a private developer, by city forces, or by a city contractor, will be done in accordance with approved plans. No work is to begin until such plans have been approved. The director of public works and the public works department or designated consultant must approve any revision to such plans prior to implementation. Failure to receive prior approval of plans and/or revisions may result in removal or modification of construction at the expense of the contractor or developer.

D. Violations. It is unlawful for any person, firm, or corporation to erect, construct, enlarge, alter, repair, move, improve, convert, equip, use or maintain any frontage improvements/public utilities or cause or permit the same to be done in violation of this code.

E. Abatement. All frontage improvements and infrastructure that are determined, after inspection by the city, to not comply or meet minimum standards as defined in this code, will be abated by repair, rehabilitation or removal. A correction notice may be issued by the city to define the work that must be adjusted.

F. Appeals. In order to provide for reasonable interpretation of the provisions of this code and to hear appeals provided for hereunder, appeals must initially be addressed to the director of public works. [Ord. 819B § 13, 2007; Ord. 810B § 6, 2006; Ord. 785B § 14 (1.10), 2005.]

#### **12.04.150 Permits.**

A. A right-of-way permit will be obtained from the engineering division before any person, firm or corporation will:

1. Commence any work to alter, construct, or repair any facilities within a public right-of-way or easement, including but not limited to: pavement, sidewalk, utilities, conduits, vaults, or any other structure, utility or improvement located over, under or upon a public right-of-way or easement in the city of Chehalis; or

2. Place any structure, building, barricade, or materials tending to cause a dangerous situation or obstruct, damage, or disturb the free use of the right-of-way or any improvement situated therein.

B. A separate permit will be obtained for each separate project. The timeline for a right-of-way permit will depend upon the needs of the project. However, the city will also factor the health, safety, and welfare of the community when determining the allowable time for a permit to remain valid. In no case will right-of-way permits be issued for longer than one year. Upon expiration of a permit, a new permit request may be submitted for consideration by the engineering division.

C. The issuance or granting of a permit or approval of plans, specifications, and computations will not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits appearing to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction will not be valid.

D. The issuance of a permit based upon plans, specifications, and other data will not prevent the engineering division from thereafter requiring the correction of errors in said plans, specifications, and other data, or from preventing operations being carried on when in violation of this code or of any other ordinances of this jurisdiction.

E. The city may, in writing, suspend or revoke a permit issued under the provisions of this code whenever the permit is issued in error or on the basis of incorrect information supplied, or in violation of any ordinance or regulation or any of the provisions of this code.

F. Much of the work covered under these standards will require multiple permit authority reviews and approvals. Several types of permits and approvals require prior approval from the authority before a building or other permit can be issued. Any questions regarding information about permits, approvals and agreements should be directed to the community development director. [Ord. 819B § 13, 2007; Ord. 785B § 14 (1.11), 2005.]

#### **12.04.160 Design standards.**

A. Detailed plans prepared by a licensed engineer must be submitted to the engineering division for review and approval prior to the commencement of any construction. The applicant's engineer will be a professional engineer registered as such in the state of Washington. All plans must be signed and stamped by the applicant's engineer prior to submittal for plan review. The city will review all submittals for general compliance with these standards. An acceptance by the city does not relieve the applicant or the applicant's engineer from the responsibility of ensuring that all facilities are safe and that calculations, plans, specifications, construction, and as-built drawings comply with normal engineering standards, these standards, and all applicable federal, state, and local laws and codes.

Final plans must be signed and approved by the director of public works prior to the start of construction. The applicant will provide the city with two full-sized copies, and two 11-inch by 17-inch copies. Plans will be clearly marked as record documents with no disclaimers and conform to CMC [12.04.170](#), Drafting standards. An electronic or digital copy in an AutoCAD-readable format will be submitted with the mylar plan set. It is the contractor's responsibility to ensure that a signed and approved set of plans and all necessary permits are on the job site whenever work is being performed.

The director of public works must also approve any subsequent revisions to the plans deemed significant by the engineering division. Failure to secure director approval for plan modifications may lead to corrective actions undertaken at the expense of the developer. The city may seek reimbursement for staff and material costs associated with any rework necessitated by unapproved modifications.

B. Materials proposed for use in construction of publicly owned or maintained utilities must be in conformance with approved material standards in place at the time of submittal. Alternate materials will not be evaluated or considered during the plan review period.

C. Four copies of plans must be submitted along with a completed plan checklist. All drawings will be either a 22-inch by 34-inch or 24-inch by 36-inch sheet size.

D. Plan and profile drawings are required for all proposed transportation-related improvements; street illumination; traffic signalization; storm drainage facilities; or sewer and water improvements. For specific minimum requirements, see the plan checklist at

the end of this article. On occasion, the scope of a project (i.e., installation of a driveway, replacement of sidewalk, or replacement of sanitary side sewer) may not require engineered plans and can be handled via a right-of-way permit, as determined by the the public works department or designated consultant.

E. Specifications will be required and submitted with the plans if general notes do not adequately cover the project requirements. [Ord. 819B § 13, 2007; Ord. 785B § 14 (1.12), 2005.]

#### **12.04.170 Drafting standards.**

A. All plans submitted for either design approval or permanent record will be free of photographs or stick-ons. Shading or hatching may be acceptable if the pattern is not excessively dense and does not compromise readability.

B. Design drawings will be submitted on clean, legible blue or black line format. Half-size drawings may be submitted for design review if prior authorization is granted by the public works department or designated consultant. Half-size drawings will be 11 inches by 17 inches and will be in a format that can be scaled using a standard engineer's scale.

C. As-built drawings will conform to the plan checklist and be submitted on static-free four-mil mylar with permanent image, and three sets of blue line copies. Sheet size will be 22 inches by 34 inches or 24 inches by 36 inches. No sepia will be accepted.

D. Plans will be prepared with the understanding that each may be microfilmed. Minimum nominal text size will be one-eighth inch.

E. No engineering plans will be accepted with architect's scale.

F. Street drawings will be either one inch equals five feet, one inch equals 10 feet, one inch equals 20 feet, or one inch equals 30 feet horizontal with vertical not to exceed one inch equals 10 feet. Utility drawings may be accepted at one inch equals 50 feet or one inch equals 40 feet if they are legible and able to be microfilmed.

G. Plans will show all existing and proposed monuments. All monuments will be described using current city of Chehalis coordinates. Centerline of roadways, easements (with type and dimensions), and other pertinent data will be referenced to existing monuments.

H. All existing features (pipes, curbs, power poles, etc.) are to be produced with a small pen or half-tones. Proposed features will be distinguished by a larger or bolder line weight.

I. Different line types will be used to distinguish different features. For example: centerline and right-of-way will have different line types.

J. It will be noted that the preceding guidelines should not be construed to be the only requirements for completed drawings, but rather an outline of minimum requirements for submitting complete drawings for the city's review. Particular care should be exercised in the preparation of the plans to ensure their completeness and clarity that will facilitate a timely response following the city's review. [Ord. 819B § 13, 2007; Ord. 785B § 14 (1.13), 2005.]

#### **12.04.180 Fees.**

Fees, charges or bonding requirements will be as established by an ordinance passed by the city council except where specifically set forth in the CMC. The city

council will further set the dollar penalty for failure to pay said fee or charge in a timely manner by passage of such ordinance.

All plan check fees are due prior to the release of approved plans and all inspection fees are due at the time of the preconstruction meeting. In addition, there are various miscellaneous service and connection fees and charges. Applicants should request an estimate of these fees and charges from the city's community development director as soon as practical.

Prior to physical connection to and use of city water and sewer systems, all public works improvements must be completed and approved and all applicable fees paid. [Ord. 819B § 13, 2007; Ord. 785B § 14 (1.14), 2005.]

#### **12.04.190 Bonding.**

A. Bonds or other allowable securities may be required by the city to guarantee the performance or maintenance of required work. The type and amount of security will be consistent with the required work and approved by the city attorney. Types of securities include, but are not limited to, a bond with a surety qualified to do a bonding business in this state, a cash deposit, an assigned savings account, or a set-aside letter.

B. Performance Bond. No development permits will be issued until all required improvements are reflected in the approved civil engineering plans. Exceptions to this requirement must be submitted in writing to the director of public works. Upon completion of building construction and with the approval of the director of public works, appropriate surety for minor civil work may be accepted and a performance bond posted with the city. The performance bond must be in an amount equal to 150 percent of the cost of the improvements. [Ord. 785B § 14 (1.15), 2005.]

#### **12.04.200 Utility locations.**

A. Utilities within a right-of-way or easement on new roads or in roadways where existing utilities are not in conflict will be located in accordance with these standards as approved by the public works director. Where existing utilities are in place, new utilities will conform to these standards as nearly as practical and yet be compatible with the existing installations. All deviations of location must be approved by the director of public works. Existing utilities will be shown using the best information available. This verification may require exploration/excavation (potholing) if utilities are in conflict with proposed design. The contractor/developer will be responsible for utility locations in conjunction with their project.

B. All new utilities other than those located on private property will be installed underground by the utility owning said facility and new and existing facilities will comply with provisions as set forth in these standards and/or in the applicable franchise agreement.

C. A right-of-way permit is required of any utility, except city-owned facilities and utilities, with a franchise agreement with the city for all work done within the right-of-way. The utility will comply with all provisions as set forth in these standards. [Ord. 785B § 14 (1.16), 2005.]

#### **12.04.210 Utility extensions.**

See CMC [13.04.520](#) and [13.08.530](#). [Ord. 785B § 14 (1.17), 2005.]

**12.04.220 Easements.**

A. Publicly owned utilities on privately owned lands are generally not permitted unless a benefit to the public or the utility system can be demonstrated. Where public utilities and/or their conveyance systems are permitted to cross private lands, an easement must be granted to the city. The engineering division will generally process, record and file all easements. If the property is platted, the easement may be conveyed when the short plat or final plat is filed. All easements not shown on a plat must be prepared by a land surveyor or engineering firm, licensed by the state of Washington, and able to perform such work.

B. Easement widths will typically be 20 feet. Construction easements will be a minimum of 30 feet wide, including the permanent easement. Under special circumstances, the public works department or designated consultant may require alternate easement widths.

C. Easements are required to be submitted in draft form, unsigned, for review and approval prior to plan approval. Signed copies are required prior to final acceptance of the project and issuance of certificate of occupancy. Any change in design that places an amenity, i.e., water, sewer, sidewalk, etc., outside of the easement may necessitate stopping of construction until plans and easements can be resubmitted and approved. Easements will be filed by the city upon satisfactory completion of the work. [Ord. 819B §§ 13, 15, 2007; Ord. 785B § 14 (1.18), 2005.]

**12.04.230 Annexation agreement requirement.**

Owners of properties lying outside city boundaries must sign an annexation agreement that legally commits their property to eventual annexation prior to being served by city utilities (Resolution Nos. 7-76 and 8-81). This annexation agreement requirement will be applied to all extensions of city utilities to areas outside the city limits. [Ord. 785B § 14 (1.19), 2005.]

**12.04.240 Traffic control.**

A. The contractor/developer will be responsible for interim traffic control during construction on or along traveled roadways. Traffic control will follow the guidelines of the WSDOT/APWA Standard Specifications. All barricades, signs, coning and flagging will conform to the requirements of the MUTCD. A traffic control plan will be submitted and approved by the public works department prior to the start of construction.

City utilities constructed within the Lewis County right-of-way will follow all traffic control requirements set forth by the Lewis County department of public works and MUTCD.

Signs must be legible and visible and will be removed at the end of each work day if not applicable after construction hours.

All necessary and/or required traffic control devices will be in place prior to the beginning of project construction, or on a daily basis during project construction.

B. When road closures and detours cannot be avoided, the contractor/developer will notify the public works department and the engineering division a minimum of two business days in advance. The city may require that a detour plan be prepared and submitted for approval prior to closing any portion of a city roadway. The engineering division will notify the fire department of potential road closures.



C. A right-of-way permit is required and must be obtained before any work in the street can commence. [Ord. 785B § 14 (1.20), 2005.]

**12.04.250 Call before you dig.**

All contractors/developers are responsible for timely notification of all utilities in advance of any construction in the right-of-way or utility easements. The Utilities Underground Location Center telephone number is 1-800-424-5555. A minimum of two business days' advance notice is required. The contractor/developer must provide separate notification to any utility not participating in or using the Utilities Underground Location Center. [Ord. 785B § 14 (1.21), 2005.]

**12.04.260 Plan checklist.**

The plan checklist in this section provides a list of the information that is to be included on the plans submitted to the engineering division for review. Although the list is not all-inclusive, it should serve as a general guide for reference purposes. Not all items listed will apply in all situations. The checklist should be completed by the applicant and included with all plan submissions.

<b>APPROVED FOR CONSTRUCTION</b>	
BY _____	DATE _____
<b>PUBLIC WORKS DEPARTMENT OR DESIGNATED CONSULTANT</b>	
APPROVAL EXPIRES: _____	

**PLAN CHECKLIST**

STANDARD ITEMS: WATER, SANITARY SEWER, STORM SEWER, STREET, LIGHTING AND SIGNALS

CHECK BOXES AS APPLICABLE

- Vicinity Map
- Legend (APWA Standard Symbols)
- North Arrow
- Scale Bar
- Datum – Bench Mark Elevation and Location
- Title Block:
  - Title:
  - Date:
  - Design By:
  - Checked By:
  - Chehalis Drawing Number (If Applicable)
  - Signature Approval Block (See Above Example)
  - Sheet Number of Total Sheets
  - Revisions and Revising Dates
- Section, Township and Range
- Engineer/Land Surveyor Stamp (Signed and Dated)
- Utility System Map (Showing All Proposed Utilities on One Drawing)

- Plan Submitted on 24-Inch by 36-Inch Sheet (Mylar)
- Detail Sheet(s) (Describing Applicable Work)
- "Call Before You Dig" Note
- General Notes and Construction Notes
- Traffic Control Plan (per MUTCD)
- Coordinates
- As-Built Drawings

#### PLAN PORTION STANDARD ITEMS

- Centerline and Stations
- Edge of Pavement, Width and Pavement Type
- Right-of-Way Dimensions and Right-of-Way Lines Labeled
- Proposed Survey Monument Locations
- Sidewalk and Width
- Match Lines with Station and "See Page" Notation
- Roadway and Restoration Sections (If Applicable)
- Existing Utilities (Above Ground and Below Ground)
- Adjacent Property Lines, Ownership, Parcel Number and Address
- Note When Matching Existing Utilities and Features
- Easements, Existing, Proposed, Type, and Dimensions (If Applicable)
- Define Survey Baseline vs. Construction Baseline (If Applicable)
- Street Names with Quadrant Suffix

#### PROFILE PORTION STANDARD ITEMS

- Profile Grades (Decimal FT./FT.)
- Existing Ground Profile (On Construction Baseline for Street or over Utility Installation When Roadway Section Not Included)
  - Scale (Horizontal and Vertical)
  - Stationing
  - Vertical Elevation Increments
  - Existing Utilities (If Available)
  - Stations for Structures (If Applicable)

#### SANITARY SEWER

##### Plan View

- Station and Offset Shown at Each Proposed Manhole
- Manholes Numbered with Type Designation and Invert and Rim Elevations
- Flow Direction (With Arrow on Pipe)
- Depth at Property Line (If Applicable)
- Distance from Water Lines (If Applicable)
- Type, Size and Length of Pipe from Center of Manhole to Center of Manhole
- Station for Sewer Laterals at Property Line
- On As-Built, Laterals Will Be Related to Property Corners Measured along the Right-of-Way Line

- Force Main and Appurtenances with Station and Offset

#### PROFILE VIEW

- Manholes Numbered, with Type Designation and Invert Elevations Showing Direction In and Out

- Rim Elevation
- Grades Shown (Decimal Form FT./FT.)
- Type of Pipe
- Size of Pipe
- Length of Pipe (In L.F.) from Center of Manhole to Center of Manhole
- Existing Utilities Crossings
- Force Main and Appurtenances with Stations and Offsets

#### WATER

##### Plan View

- Existing Utility Crossings
- Fire Hydrants
- Fixtures with Stations, Including Type and Band Blow-Off (At Dead-End of Line)
- Vacuum and Air Release Valves When Required
- Tees, Crosses, Elbows, Adapters and Valves, Meter Station and Offset
- Distance from Sanitary or Storm Sewer (If Applicable)
- Type, Size, and Length of Pipe Between Fixtures

##### Profile View

- Existing Utility Crossing
- Show Fixtures with Stations and Elevations
- Show Valves with Stations and Elevations
- Type, Size and Length of Pipe Between Fixtures
- Grades

#### STORM SEWER

##### Plan View

- Station and Offset at Each Manhole/Catchbasin
- Manhole/Catchbasin Type and Size
- Manhole/Catchbasin Rim Elevation
- Flow Direction with Arrow on Pipe Channel
- Type, Size and Length of Pipe
- Storm Water Detention Facility (Pond Dimensions with Elevations)
- Control Structure with Orifice Size and Elevation
- Emergency Overflow Location and Elevation
- Design High Water Elevation

##### Profile View

- Station and Offset at Each Manhole/Catchbasin
- Invert Elevations on Manholes/Catchbasins Showing Direction of Flow
- Manhole/Catchbasin Type and Size
- Rim Elevation

- Type, Size and Length of Pipe (In L.F.)
- Grades (Decimal Form FT./FT.)
- Existing Utility Crossings
- Storm Water Detention Facilities
- Control Structures

#### EROSION CONTROL

- Construction Entrance Detail
- Silt Fences and Traps
- Mulching and Vegetation Areas
- Clearing and Grubbing Limits
- Existing and Finished Grade
- Details and Locations of All BMPs Recommended
- Location and Details of Temporary Sediment Ponds

#### STREET

##### Plan View

- Identify Adjacent Property Lines, Ownership and Addresses
- Flow Direction Arrows at Curb Returns Showing Grade
- Spot Elevations on Curb Returns
- PC, PT, PI Stationing of Horizontal Curves
- Curve Information Delta, Radius, Length and Tangent
- BCR and ECR (Begin Curb Radius, End Curb Radius)
- Identify All Field Design Situations by Notes
- Match Existing Features Noted by Station with Elevation
- Typical Roadway Sections and Pavement Types
- Pavement Markings Noted by Station and Offset
- Sidewalks
- Bus Pullout/Shelter
- Driveway Entrances
- Station at Center of Street
- Width, Type (AC, PCC), Note Applicable City Standard Detail
- Curb and Access Ramps – Per City Standard Detail

##### Profile View

- Vertical Information PVC, PVI, PVT, AP, Low Point, High Point
- Show Grades (Decimal Form FT./FT.) with (+ and -) Slope
- Super Elevated Roadway Segments

#### ILLUMINATION

- Station and Offset of Fixtures
- Pole Type, Including Manufacturer and Model Number
- Mounting Height, Arm Length, Anchor Bolt Size and Pattern
- Power Source
- Wire Size, Type, Conduit
- Luminaire Type, Lamp Wattage

- Location of Service Disconnects
- Line Loss Calculations
- J-Box Location

**SIGNALS**

- Station and Offset of Signal Base, Cabinets, Ped. Lead, Loops, Etc.
- Wiring Schedule
- Signal Heads and Mounting Assembly
- Detection Loops
- Opticom
- Control Cabinet, Size and Layout
- Power Source
- Conduit
- Wire Size and Type
- Construction Notes
- J-Box Schedule
- Pedestrian Signal Type with Push Button
- Controller Type, Configuration, and Wiring Schematic

Project \_\_\_\_\_ Division: \_\_\_\_\_

Category: \_\_\_\_\_

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_

Checked By: \_\_\_\_\_ Date: \_\_\_\_\_

[Ord. 819B § 13, 2007; Ord. 785B § 14 (1.22), 2005.]

**Article III. Transportation**

**12.04.270 General considerations.**

This article provides minimum development standards supplementing the applicable standards as set forth in Article II of this chapter, and to encourage uniform development of an integrated, fully accessible public transportation system that will facilitate present and future travel demands with minimal environmental impact to the community as a whole. [Ord. 785B § 14 (2A), 2005.]

**12.04.280 Streets.**

A. General. City streets are classified as arterials, collectors and local access streets in accordance with regional transportation needs and the functional use each serves. Function is the controlling element for classification and will govern right-of-way, street width, and street geometries. The public works department or designated consultant will determine the classification of new streets.

Street design must provide for the maximum loading conditions anticipated. The width and grade of the pavement must conform to specific standards set forth herein for safety and uniformity. See Table I, Minimum Street Standards.

B. Design Standards. The design of streets and roads will depend upon their type and usage. The design elements of city streets will conform to these standards as set forth herein and current design practices as set forth in Article II of this chapter.

The layout of streets will provide for the continuation of existing principal streets in adjoining subdivisions or of their proper projection when adjoining property is not subdivided. Minor streets, which serve primarily to provide access to abutting property, will be designed to discourage through traffic. See Table I, Minimum Street Standards.

**Table I. Minimum Street Standards**

<b>Design Standard</b>	<b>Boulevard</b>	<b>Major or Minor Arterial</b>	<b>Commercial Collector</b>	<b>Neighborhood Collector</b>	<b>Local Access</b>	<b>Private</b>
Design Limitations	Access and intersections should be limited. No on-street parking.		N/A	N/A	N/A	N/A
Minimal Structural Design	See Standard Drawing No. 2-2					
Standard Right-of-Way	90' – 102'	84' – 104'	66' – 78'	60'	60'	40' + one 10' utility easement adjacent
Standard Pavement Width	48' (may have a 16' median)	48' – 60'	40'	28' – 40'	36'	20'
Parking Lane	None Allowed	None Allowed	8' Both Sides	7' One Side	7' One Side	N/A
Minimum – Maximum Grade	0.5% – 8.0%	0.5% – 8.0%	0.5% – 10.0%	0.5% – 12.0%	0.5% – 15.0%*	0.5% – 15.0%**
Curb	Both Sides					***
Sidewalks	Both Sides 6' (min.) 8' – pedestrian corridor 10' – zero lot setback			Both Sides 5'	Both Sides 5'	One Side 5'
Cul-de-Sac Radius/ (Pavement Radius)	N/A	N/A	50'/(50')	N/A	50'/(45')	50'/(45')
Intersection Curb Radius	35'	35'	35'	35'	25'	25'
Design Speed (MPH)	40	40	30	30	25	25

Minimum Centerline Radius	w/ superelevation * per AASHTO w/o superelevation 600'	w/ superelevation * per AASHTO w/o superelevation 600'	150'	150'	100'	100'
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\*Maximum superelevation – 6%.  
 \*\*Any grade exceeding 12% must be located on straight sections of street.  
 \*\*\*Standard curb is required if sidewalk is within eight feet of EOP, otherwise no curb requirement.

1. Alignment of major arterials, minor arterials and collectors will conform as nearly as possible with that shown in the comprehensive plan.
  2. Grade. Street grade should conform closely to the natural contour of the land. In some cases the public works department or designated consultant may require a different grade. The minimum allowable grade will be one-half percent. The maximum allowable grade will be eight to 15 percent depending on the street classification.
  3. Width. The pavement and right-of-way width will depend on the street classification. Table I, Minimum Street Standards, shows the minimum widths allowed.
- The general notes that follow will be included on any plans dealing with street design in addition to all other applicable requirements.

**General Notes (Street Construction)**

1. All workmanship and materials will be in accordance with city of Chehalis standards and the most recent edition of the State of Washington Standard Specifications for Road, Bridge, and Municipal Construction.
2. The contractor will be responsible for all traffic control in accordance with MUTCD. Prior to disruption of any traffic, traffic control plans must be prepared and submitted to the city for approval. No work will commence until all approved traffic control plans are in place.
3. All curb and gutter, street grades, sidewalk grades, and any other vertical and/or horizontal alignment will be staked by an engineering or surveying firm capable of performing such work.
4. Where new asphalt joins existing, the existing asphalt will be cut to a neat vertical edge and tacked with asphalt emulsion type CSS-1 in accordance with the Standard Specifications. The new asphalt will be feathered back over existing to provide for a seal at the saw cut location and the joint sealed with grade AR-4000W paving asphalt.
5. Compaction of subgrade, rock and asphalt will be in accordance with the Standard Specifications.
6. Form and subgrade inspection by city inspectors is required before pouring concrete. Twenty-four hours' (one work day) advance notice is required for form inspection.

- 7. Testing and sampling frequencies are described in these standards.
- 8. The public works department will install or oversee the installation of street name and regulatory signs at the contractor's and/or the developer's expense. All street name and regulatory signs will be requested and approved by the city prior to the start of construction.

C. Naming. Streets will be designated according to specific criteria. All streets north of Main Street and west of Market Boulevard/National Avenue are designated as Northwest (N.W.). All streets north of Main Street and east of Market Boulevard/National Avenue are designated as Northeast (N.E.). All streets lying south of Main Street and west of Market Boulevard are designated as Southwest (S.W.). All streets south of Main Street and east of Market Boulevard are designated as Southeast (S.E.). "Streets" and "avenues" usually lie perpendicular to each other.

"Avenues" generally run north/south and "streets" run east/west. "Drives" are irregular or diagonal streets over two grid blocks in length not conforming to the grid pattern. "Places" run north/south, parallel to but between avenues. "Ways" run east/west, parallel to but between streets. "Courts" are cul-de-sacs that cannot be extended. "Lanes" are private streets.

An address number will be assigned to all new buildings at the time a building permit is issued. It is then the development permit holder's responsibility to make sure that the numbers are placed clearly and visibly at the main entrance to the property or at the principal place of ingress.

The developer must check with the community development director regarding the naming of streets. This should be done at the time the preliminary plat is submitted and again upon approval of the final plat. This will ensure that the name assigned to a new street is consistent with city policy.

D. Signing and Striping. Street signs are defined as any regulatory, warning, or guide signs. The developer is responsible for the cost of all street signs. Street signs will comply with the latest edition of the U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD).

Pavement markings and street signs, including poles and hardware, will be paid for by the developer, but will be designed, furnished and installed by the city or by the developer under the city's direction, to establish and maintain uniformity. The public works department will determine whether pavement markings and street signs will be provided by the city or by the developer. If the work is to be performed by the city, the developer must submit a written request to public works and the developer will then be billed upon completion of the work.

1. Standards for Sign Post Material.

Post	2" x length x 14-gauge perforated square tube
Anchor	2-1/4" x 36" x 12-gauge
Sleeve	2-1/2" x 12" x 12-gauge
Corner bolt with 2 bends and nut	
Aluminum drive rivets – 3/8" for mounting signs	



## 2. Standards for Pavement Markings.

a. Legends, arrows, symbols and crosswalks must be heat-fused preformed thermoplastic Hot Tape or Premark.

### b. Striping Material.

i. Arterial streets – Dura-Stripe;

ii. Collector streets – Paint.

E. Right-of-Way. Right-of-way is determined by the functional classification of a street. Refer to Table I, Minimum Street Standards.

Right-of-way requirements may be increased if a traffic impact analysis indicates that additional lanes, pockets, transit lanes, bus loading zones, operational speed, bike lanes, utilities, or other such improvements are required.

Right-of-way will be conveyed to the city on a recorded plat or by a right-of-way dedication deed.

### F. Private Streets.

1. Private streets may be allowed under the following conditions:

a. Permanently established by tract or lot providing legal access to serve not more than four dwelling units or businesses on separate parcels, or unlimited dwelling units or businesses situated on a single parcel and sufficient to accommodate required improvements, to include provisions for future use by adjacent property owners when applicable; and

b. Have a minimum 20-foot paved surface, and a sidewalk five feet in width of such a design that prevents parking on the sidewalk; and

c. Accessible at all times for emergency and public service vehicle use; and

d. Will not result in the land-locking of present or future parcels nor obstruct public street circulation; and

e. Covenants have been approved, recorded, and verified with the city that provide for maintenance of the private streets and associated parking areas by the owner or homeowners' association or other legal entity.

2. Acceptance as Public Street. Acceptance of private streets as public streets will be considered only if provision is made for the street(s) to meet all applicable public street standards, including right-of-way widths.

### G. Street Frontage Improvements.

1. All commercial and residential (including multifamily) development, plats, and short plats will install street frontage improvements at the time of construction as required by the standards. Such improvements may include curb and gutter; sidewalk; street storm drainage; street lighting system; traffic signal modification, relocation or installation; utility relocation; landscaping and irrigation; and street widening per these standards. Plans will be prepared and signed by a licensed civil engineer registered in the state of Washington.

2. All frontage improvements will be made across full frontage of property and on all sides that may border a city right-of-way.

3. Exceptions. See CMC [12.04.110\(D\)](#), Exceptions.

H. Cul-de-Sac. Streets designed to have one end permanently closed will be no longer than 400 feet. At the closed end, there will be a widened "bulb" having a minimum paved traveled radius as shown in Table I, Minimum Street Standards.

### I. Half-Street.

1. A half-street is an otherwise acceptable roadway section modified to conform to limited right-of-way on the boundary of property subject to development. A resulting minimum 20-foot-wide paved surface is required.

2. A half-street may be approved by the director of public works when all of the following conditions are met:

a. There is reasonable assurance of obtaining the prescribed additional right-of-way from the adjoining property suitable for completion of a full-section roadway; and

b. Such alignment is consistent with or will establish a reasonable circulation pattern; and

c. The right-of-way width of the half-street will equal at least 30 feet or 50 percent of the required right-of-way (whichever is greater); and

d. The traveled way will be surfaced the same as the designated street classification to a width not less than 24 feet; and

e. The half-street will be graded consistent with the centerline of the ultimate roadway section along the property line; and

f. Property line edge of street will be finished with permanent curb and gutter to ensure proper drainage, bank stability and traffic safety; and

g. Required frontage improvements will be installed in conjunction with the half-street.

J. Medians. A median will be in addition to, not part of, the specified roadway width except on a road classified as a boulevard. Medians will be designed so as not to limit turning radius or sight distance at intersections.

K. Intersections.

1. Traffic control will be as specified in the most recent edition of the MUTCD or as modified by the director of public works as a result of appropriate traffic engineering studies.

2. Street intersections will be laid out to intersect as nearly as possible at right angles. Sharp-angled intersections will be avoided. For reasons of traffic safety, a "T" intersection (three-legged) is preferable to the crossroad (four-legged) intersection for local access streets. For safe design, the following types of intersection features should be avoided:

a. Intersections with more than four intersecting streets;

b. "Y" type intersections where streets meet at acute angles;

c. Intersections adjacent to bridges and other sight obstructions;

d. Offset intersections that are not conducive to side traffic flow.

In no case will the angle of the intersection be less than 60 degrees nor greater than 120 degrees. The preferred angle is 90 degrees.

3. Spacing between adjacent intersecting streets, whether crossing or "T," should be as follows:

<b>When classification involved is:</b>	<b>highest Minimum centerline should be:</b>	<b>offset</b>
Major arterial	350 feet	
Minor arterial	300 feet	

Commercial collector	200 feet
Neighborhood collector	200 feet
Local access	150 feet

When different classes of streets intersect, the higher standard will apply on curb radii. Deviations may be allowed if the public works department or designated consultant determines that strict compliance with the standards is impractical or unreasonable in the circumstance.

4. On sloping approaches at an intersection, landings will be provided with a grade not to exceed a one-foot difference in elevation for a distance of 30 feet approaching any arterial, or 20 feet approaching a collector or local access street, measured from the nearest right-of-way line (extended) of intersecting street.

L. Driveways.

1. All abandoned driveway areas on the same frontage will be removed and the curbing and sidewalk or shoulder and ditch section will be properly restored.

2. All driveways will be constructed of Portland cement concrete (PCC) or asphalt from the right-of-way line to the edge of the street. PCC driveways will be subject to the same testing and inspection requirements as curb, gutter, and sidewalk construction. Residential PCC driveways will have a nominal concrete thickness of six inches. All other PCC approaches will be eight inches thick.

3. Joint-use driveways serving two adjacent parcels may be built on their common boundary with a formal written agreement between both property owners and with the approval of the city. The agreement will be a recorded easement for both parcels of land specifying joint usage.

4. Grade breaks, including the tie to the roadway, will be constructed as smooth vertical curves. The maximum change in driveway grade will be eight percent within any 10 feet of distance on a crest and 12 percent within any 10 feet of distance in a sag vertical curve.

5. No commercial driveway will be approved where backing onto the sidewalk or street would occur.

6. Driveways will be separated by 20 feet of straight curb between each driveway providing access to a parcel or parcels of land unless the public works department or designated consultant determines that strict compliance with the standards is impractical or unreasonable in the circumstance.

7. No driveway will be built within 15 feet of the end of any curb return or within five feet of any property line unless the public works department or designated consultant determines that strict compliance with the standards is impractical or unreasonable in the circumstance.

8. Driveway Widths.

a. The maximum driveway width for a single driveway onto an arterial or collector will be:

Frontage Width	Residential	Commercial	Industrial
Up to 50 feet	24 feet	24 feet	24 feet
50 to 75 feet	24 feet	30 feet	30 feet

More than 75 feet	30 feet	30 feet	35 feet
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b. The maximum driveway width for each of two driveways onto an arterial or collector will be:

Frontage Width	Residential	Commercial	Industrial
Up to 50 feet	not permitted	not permitted	not permitted
50 to 75 feet	20 feet	20 feet	24 feet
More than 75 feet	20 feet	24 feet	24 feet

c. The maximum driveway width for a single driveway onto a local access street will be:

Frontage Width	Residential	Commercial	Industrial
Up to 50 feet	24 feet	26 feet	not permitted
50 to 75 feet	24 feet	26 feet	not permitted
More than 75 feet	24 feet	26 feet	not permitted

d. The maximum driveway width for each of two driveways onto a local access street will be:

Frontage Width	Residential	Commercial	Industrial
Up to 50 feet	not permitted	not permitted	not permitted
50 to 75 feet	20 feet	20 feet	not permitted
More than 75 feet	20 feet	24 feet	not permitted

e. The maximum driveway width for one-way driveways will be:

Frontage Width	Residential	Commercial	Industrial
Up to 50 feet	14 feet	22 feet	22 feet
50 to 75 feet	14 feet	22 feet	22 feet
More than 75 feet	14 feet	22 feet	22 feet

f. A road approach or wider driveway may be approved by the director of public works or designated consultant when a substantial percentage of oversized vehicle traffic exists, when divisional islands are desired, or when multiple exit or entrance lanes are needed.

#### 9. Arterial Street Access.

a. No driveway may access an arterial street within 75 feet (measured along the arterial) of any other such access to the street on either side of the travel way but may be allowed at locations directly opposite another point of access.

b. No driveway access will be allowed to an arterial street within 150 feet of the nearest right-of-way line of an intersecting street.

c. Within the limitations set forth above, access to arterial streets within the city will be limited to one driveway for each tract of property separately owned. Properties contiguous to each other and owned by the same person are considered to be one tract.

d. Driveways giving direct access onto arterials may be denied if alternate access is available. The director of public works may permit deviations from this requirement if sufficient justification is provided.

e. Road approaches and/or ingress and egress tapers may be required in industrial and commercially zoned areas as directed by the director of public works. Tapers will be designed per the most recent edition of "Transportation and Land Development" by V.G. Stover and F. Koepke.

**M. Sight Obstruction.**

1. The following sight clearance requirements take into account the proportional relationship between speed and stopping distance.

2. The sight distance area is a clear-view triangle formed on all intersections by extending two lines of specified length (A) and (B) as shown in subsection (M)(3)(b) of this section, Uncontrolled Intersection, from the center of the intersecting streets along the centerlines of both streets and connecting those endpoints to form the hypotenuse of the triangle. Refer to Standard Drawing 2-1 at the end of this chapter. The area within the triangle will be subject to said restrictions to maintain a clear view on the intersection approaches.

**3. Sight Distance Triangle.**

a. Stop- or Yield-Controlled Intersection. Providing adequate sight distance from a street or driveway is one of the most important considerations to ensure safe street and driveway operation. The intersection sight distance criteria given in the following table is based on line B-1 shown in Figure IX-40 of "A Policy on Geometric Design of Highways and Streets" published by AASHTO. This table applies to all intersections as well as driveways with an ADT greater than 20. For driveways with an ADT of 20 or less, the stopping sight distance in Table III-1 of the AASHTO publication can be used.

Operating Speed (MPH)	Sight Distance		
	Intersection Sight Distance		Stopping Sight Distance
	2 Lanes	4+ Lanes	
20	210	230	125
25	255	280	150
30	310	340	200
35	355	390	250
40	410	450	325

Other factors such as vertical and horizontal curves and roadway grades also need to be taken into account. Such factors can require necessary modification to the intersection sight distance given in the above table.

Sight distance is measured from a point on the minor road or driveway 15 feet from the edge (extended) of the major road pavement (or nearest traffic lane if

parking is permitted) and from a height of 3.50 feet on the minor road to a height of object of 4.25 feet on the major road.

b. Uncontrolled Intersection.

Operating Speed (MPH)	Sight Distance	
	Major Street (A)	Minor Street (B)
20	90	90
25	110	110
30	130	130
35	155	155
40	180	180

c. Vertical Clearance. The area within the sight distance triangle will be free from obstructions to a motor vehicle operator's view between a height of two and one-half feet and 10 feet above the existing surface of the street.

d. Exclusions. Sight obstructions that may be excluded from these requirements include: fences in conformance with this chapter, utility poles, regulatory signs, trees trimmed from the base to a height of 10 feet above the street, places where the contour of the ground is such that there can be no cross-visibility at the intersection, saplings or plant species of open growth habits and not in the form of a hedge that are so planted and trimmed as to leave a clear and unobstructed cross-view during all seasons, buildings constructed in conformance with the provisions of appropriate zoning regulations and preexisting buildings.

N. Surfacing Requirements. The following are the surfacing requirements for each application listed:

1. Asphalt Pavements. The minimum pavement sections listed in Standard Drawing 2-2 are in lieu of pavement design and are based on a subgrade California Bearing Ratio (CBR) value of three. Alternate pavement designs will be accepted based on soil tests to determine the actual CBR value and completion of the worksheet on Standard Drawing 2-3 at the end of this chapter. Soil tests and a completed worksheet for each road classification will accompany plans submitted if other than the structures shown below and pavement sections in Standard Drawing 2-2 are used. One soil sample per each 500 linear feet of centerline, with a minimum of three per project, representative of the roadway subgrade, will be taken to determine a statistical representation of the existing soil conditions.

An engineering firm that specializes in soils analysis will perform the soil tests. The report, signed and stamped by a professional engineer licensed by the state of Washington, must be based on actual soils tests and submitted with the plans. All depths indicated are minimum compacted depths.

Existing pavement restoration: for utility or street-widening projects requiring restoration of existing pavement, additional information and design calculations will be required to ensure that the pavement will need minimal maintenance for five to seven years. The information required may include:

a. Pavement cores representative of typical pavement sections; and

b. Statement of existing pavement condition and discussion of how it will “match up” to the new pavement section.

2. Sidewalks.

- a. Surfacing: four inches commercial concrete;
- b. Base: two inches crushed surfacing top course or well-graded sand;
- c. Asphalt sidewalks will not be permitted.

3. Concrete Driveway.

- a. Surfacing: six inches commercial concrete for residential; eight inches commercial concrete for all others;
- b. Base: two inches crushed surfacing top course or well-graded sand.

4. Asphalt Driveway.

- a. Surfacing: three inches Class B asphalt concrete for residential; six inches Class B asphalt concrete for all others;
- b. Base: four inches ballast.

O. Temporary Street Patching. Temporary restoration of trenches will be accomplished by using two inches Class B asphalt concrete pavement (when available) or two inches medium-curing (MC-250) liquid asphalt (cold mix), two inches asphalt treated base (ATB), or steel plates.

ATB used for temporary restoration may be placed directly into the trench, bladed and rolled. After rolling, the trench must be filled flush with asphalt concrete pavement to provide a smooth riding surface. Prior to beginning street trenching work, the contractor will ensure that all necessary material for temporary patching is stockpiled at the project site, both for completing and maintaining the patch.

The contractor will maintain all temporary patches until such time as the permanent pavement patch is in place. Patches not properly maintained by the contractor will be repaired by the city at the developer’s, contractor’s and/or private utility’s expense.

P. Pavement Restoration. Trench cuts in roadways greatly degrade the condition of the pavement, as well as reduce its design life. The most significant damage can be seen in newer pavements. Pavement restoration should result in the pavement being as good as, or better than, the pre-trench cut condition. This can be achieved by the prevention of trench cuts, thorough utility coordination, and high-quality pavement restoration.

1. Trench Cuts in New Pavements. Trench cuts are not permitted in pavements that have been constructed or rehabilitated within five years. “Rehabilitation” includes all surface treatments such as chip seal, slurry seal, and asphalt overlay.

If there is no other option but to cut into new pavement, prior approval will be obtained from the director of public works. Pavement must then be restored in accordance with the standards of subsection (P)(3) of this section.

2. Transverse utility crossings must be bored or completed by another trenchless method. Bore pits must be restored in accordance with the standards of subsection (P)(3) of this section.

3. Pavement Restoration Requirements. Trench cuts, bore holes, and miscellaneous pavement repairs will be made in accordance with Standard Drawings 2-5 and 2-6 at the end of this chapter. Pavement will be restored across the entire lane. In addition, the patch will be made perpendicular to the closest affected road edge with a

single, straight, continuous cut along the entire width of the required restoration. Minimum restoration width is five feet.

4. Lane Width Restoration Requirements. For longitudinal utility trench cuts in pavements over five years old, a minimum two-inch overlay or full-depth pavement reconstruction is required for the following widths:

a. One-lane overlay or reconstruction – When trench cut or patch is within one travel lane.

b. Two-lane overlay or reconstruction – When trench cut or patch is within two travel lanes.

c. Additional overlay or reconstruction – When the remaining pavement area to the edge of existing pavement on either side is less than one travel lane. No longitudinal joints will be allowed in the wheel path.

All trench and pavement cuts will be made uniformly by wheel or saw cutting. The cuts will be a minimum of one foot outside the trench width. If the edge of the trench line degrades, ravel or is nonuniform, additional saw cutting will be required prior to final patch or paving.

All trenching will be backfilled with crushed surfacing materials conforming to Section 4-04 of the most recent edition of WSDOT/APWA Standard Specifications. The subgrade will be compacted to 95 percent maximum density, as described in Section 2-03 of the WSDOT/APWA Standard Specifications.

All granular backfill material will conform to Section 9-03.19 of the current edition of the WSDOT/APWA Standard Specifications.

If the existing material is determined by the city to be suitable for backfill, the contractor may use the native material except that the top eight inches of trench will be two and one-half inch minus ballast. All trench backfill materials will be compacted to 95 percent density.

When the trench width is 18 inches or less and is within the travel way, the trench will be backfilled with control density fill (CDF) Class B, as defined by the Washington Aggregates and Concrete Association. The aggregate will be three-eighths-inch minus. CDF may be required in wider trenches within the travel way if site conditions dictate.

Backfill placement and compaction will be performed in six-inch lifts.

Replacement of the asphalt concrete or Portland cement concrete will conform to the most current edition of the WSDOT/APWA Standard Specifications.

5. Tack Coat. Tack will be applied to the existing pavement along the edge of cut and will be emulsified asphalt grade CSS-1 as specified in the most recent edition of the WSDOT/APWA Standard Specifications. Tack coat will be applied as identified in Section 5-04 of the most recent WSDOT/APWA Standard Specifications.

6. Asphalt Concrete Class B. Asphalt concrete Class B will be placed on the prepared surface by an approved paving machine and will be in accordance with the applicable requirements of Section 5-04 of the most recent edition of the WSDOT/APWA Standard Specifications, except that longitudinal joints between successive layers of asphalt concrete will be displaced laterally a minimum of 12 inches, unless otherwise approved by the director of public works. Fine and coarse aggregate will be in accordance with Section 9-03.8 of the WSDOT/APWA Standard



Specifications. Asphalt concrete over two inches thick will be placed in equal lifts not to exceed two inches each.

The preferred means of connection to existing asphalt at the centerline, lane edges, and overlay ends is through grinding. Grinds can be a few inches off centerline to avoid existing stripping. Feathering may be used when grinding is not feasible, with the approval of the director of public works. The affected surfaces within the trenching area will be feathered and shimmed to an extent that provides a smooth-riding connection and expeditious drainage flow for the newly paved surface.

Surface smoothness will be per Section 5-04 of the most recent edition of WSDOT/APWA Standard Specifications. The paving will be corrected by removal and repaving of the trench only.

Asphalt concrete pavement for wearing course will not be placed on any travel way between October 15th and April 1st without written approval of the director of public works.

Asphalt for prime coat will not be applied when the temperature is lower than 50 degrees Fahrenheit without written approval of the director of public works.

7. Final Patch. The final patch will be completed as soon as possible but no later than 30 calendar days after the trench is first opened. Time extensions due to inclement weather or other adverse conditions will be evaluated on a case-by-case basis. However, any delays must have prior approval of the director of public works.

8. Staking. All surveying and staking will be performed by an engineering or surveying firm licensed by the state of Washington and capable of performing such work.

A preconstruction meeting will be held with the public works department and the engineering division prior to commencing staking. All construction staking will be inspected by city inspectors prior to construction.

The minimum staking of curb, gutter and sidewalk will be as follows:

a. Stake centerline alignment every 25 feet (50 feet in tangent sections) with cuts and/or fills to subgrade.

b. Stake top of ballast and top of crushed surfacing at centerline and edge of pavement every 25 feet.

c. Stake top back of curb at a consistent offset for vertical and horizontal alignment every 25 feet (50 feet in tangent sections).

d. Staking will be maintained throughout construction.

9. Testing. Testing will be required at the developer's or contractor's expense. The developer or contractor is responsible to order all required testing. The testing lab will be approved by the public works department or designated consultant prior to the commencement of any testing. Testing will be done on all materials and construction as specified in the WSDOT/APWA Standard Specifications and with the frequency as specified herein.

In addition, the public works department and the engineering division will be notified before each phase of street construction commences (i.e., staking, grading, subgrade, ballast, base, top course, and surfacing). A minimum of two business days' advance notice is required before the start of each phase. All test results and documentation will be submitted to the public works department and the engineering division prior to final approval of the project.

## City of Chehalis Testing and Sampling Frequency Guide

Item	Type of Tests	Minimum No.	Frequency
Gravel borrow	Grading and SE	1 each	1 – 4,000 ton
Sand drainage blanket	Grading	1 each	1 – 4,000 ton
CSTC	Grading, SE and fracture	1 each	1 – 2,000 ton
CSBC	Grading, SE and fracture	1 each	1 – 2,000 ton
Ballast	Grading, SE and dust ratio	1 each	1 – 2,000 ton
Backfill/sand drains	Grading	1 each	1 – 2,000 ton
Gravel backfill for:			
Foundations	Grading, SE and dust ratio	1 each	1 – 1,000 ton
Walls	Grading, SE and dust ratio	1 each	1 – 1,000 ton
Pipe bedding	Grading, SE and dust ratio	1 each	1 – 1,000 ton
Drains	Grading	1 each	1 – 100 ton
PCC structures (sidewalk, curb and gutter, foundations):			
Course aggregate	Grading	1 each	1 – 1,000 ton
Fine aggregate	Grading	1 each	1 – 500 ton
Consistency	Slump	1 each	1 – 100 CY
Air content	Air	1 each	1 – 100 CY
Cylinders (28-day)	Compressive strength	2 each	1 – 100 CY
Cement	Chemical and physical certification	1	1 – job
Asphalt cement concrete:			
Blend sand	SE	1 each	1 – 1,000 ton
Mineral filler	SG & PI, certification	1	1 – job
Completed mix	Fracture, SE, grading	1 each	1 – 1,000 ton
	Asphalt content compaction	2 each	5 – 400 ton
Asphalt treated base:			
Completed mix	SE, grading	1 each	1 – 1,000 ton
	Asphalt content compaction	1 each	5 – control lot*
Asphalt materials	Certification	1	1 – job
Rubberized asphalt	Certification	1	1 – job
Compaction testing:			
Embankment	Compaction	1 each	1 – 500 LF
Cut section	Compaction	1 each	1 – 500 LF
CSTC	Compaction	1 each	1 – 500 LF

CSBC	Compaction	1 each	1 – 500 LF
Ballast	Compaction	1 each	1 – 500 LF
Trench backfill	Compaction	1 each	1 – 500 LF

SE = Sand equivalency

\* A control lot will be a normal day's production. For minor quantities 200 tons or less per day, a minimum of two gauge readings will be taken.

**Q. Traffic-Calming Devices.** Traffic calming is used in Chehalis neighborhoods to improve residential livability by reducing the speed and impact of vehicular traffic in localized areas. This is accomplished through the incorporation of traffic-calming devices on local residential streets. Traffic-calming measures will be considered on a site-specific basis.

A petition signed by at least 67 percent of the affected property owners may be required prior to the consideration of traffic-calming devices in an existing neighborhood. Additional information along with a traffic analysis and engineering calculations may also be required by the director of public works prior to the consideration of traffic-calming devices in an existing neighborhood. In new developments, traffic-calming devices may be required by the city or may be requested by developers if these standards are met.

1. Speed berms have been approved for installation as a traffic-calming device when approved by the director of public works and installed in accordance with Standard Drawing 2-25.

Speed berms will be placed 400 to 600 feet apart with a minimum spacing of one per block.

Pavement marking design and materials will conform to the most current edition of the MUTCD.

2. Additional Measures. Other traffic-calming measures will be considered on a site-specific basis and must be approved in writing by the director of public works. [Ord. 819B §§ 13, 19, 2007; Ord. 785B § 14 (2B), 2005.]

**12.04.290 Sidewalks, curbs and gutters.**

A. General. Sidewalks are to be installed as designated in Article II of this chapter. Sidewalks are to be constructed along all streets that abut the property. Curbs and gutters will also be included with such sidewalk construction, unless otherwise authorized by the director of public works. Sidewalks will be designed to accommodate any necessary traffic control signs while still providing a minimum five-foot unobstructed walking area.

Typical sidewalk, curb, and gutter location will be at the edge of proposed or existing pavement. The sidewalk will be aligned in a relatively straight configuration and make smooth transitions around curves and corners. Alternate locations may be proposed, including the incorporation of parking and planting strips. The public works department or designated consultant may approve such alternative after he determines that strict compliance with the standards is impractical or unreasonable in the circumstance.

The owner of the property that abuts a sidewalk is responsible for all repair, maintenance, and upkeep of said sidewalk. The city is not liable for any damage or injuries caused by a sidewalk in need of repair (see CMC [12.40.020](#)).

B. Design Standards. Plans for construction of sidewalks, curbs and gutters are to be submitted as part of the street plans when applicable.

The city has set forth minimum standards that must be met in the design and construction of sidewalks, curbs and gutters. A traffic impact analysis may indicate that other design configurations would be preferable for a given project. Such alternatives may be required by the city if the public works department or designated consultant determines that strict compliance with the standards is impractical or unreasonable in the circumstance.

Sidewalks must also meet all ADA requirements including Truncated Domes; see Standard Drawing No. 2-27.

1. Sidewalks will be constructed of commercial concrete four inches thick except in a driveway section, at which point the concrete thickness must meet driveway standards. The minimum width of sidewalk will be five feet. When the sidewalk, curb and gutter are contiguous, the width of the sidewalk will be measured from the back of the curb and gutter to the back of the sidewalk. In commercial areas, sidewalks may be required to extend from the curb to the property line.

2. Arterial Streets. Sidewalks, curbs and gutters will be required on both sides of arterial streets interior to the development. Sidewalks, curbs and gutters will also be required on the development side of arterial streets abutting the exterior of said development.

3. Local Access Streets. Sidewalks, curbs and gutters will be required on both sides of local access streets interior to the development. Sidewalks, curbs and gutters will also be required on the development side of local access streets abutting the exterior of said development including cul-de-sacs.

4. Design and Construction. The design and construction of all sidewalks, curbs, gutters and walkways will meet the following minimum standards:

a. The width of sidewalks will be as shown in the street design drawings. Design of all sidewalks will provide for a gradual rather than an abrupt transition between sidewalks of different widths or alignments.

b. Form and subgrade inspection by a city inspector is required before the sidewalk is poured.

c. Monolithic pour of curb, gutter and sidewalk will not be allowed without specific approval from the director of public works.

5. Driveways. See CMC [12.04.280\(L\)](#).

6. Curbs and Gutters. Cement concrete curbs and gutters will be used for all street edges unless otherwise approved by the public works director. All curbs and gutters will be constructed in accordance with Standard Drawing 2-7.

7. The face or top of all new curbs will be embossed one-fourth inch into the cement to denote the location of water and sewer service crossings. Water services will be marked with a "W" and side sewers will be marked with an "S." The markings will be at least three inches in height and clearly legible.

8. Access Ramps. Sidewalks will be constructed to provide for access ramps in accordance with state law. Access ramps will be constructed of commercial concrete.

Form and subgrade inspection by a city inspector is required before the access ramp is poured.

C. Staking. All surveying and staking will be performed by an engineering or surveying firm licensed by the state of Washington and capable of performing such work.

A preconstruction meeting will be held with the public works department and the engineering division prior to commencing staking. All construction staking will be inspected by the public works department prior to construction.

The minimum staking of curb, gutter and sidewalk will be as follows: stake top back of curb at a consistent offset for vertical and horizontal alignment every 25 feet (50 feet in tangent sections).

D. Testing. Testing will be required at the developer's or contractor's expense on all materials and construction as specified in the most recent edition of WSDOT/APWA Standard Specifications.

At a minimum, one slump test and two test cylinders will be taken once per day. All other testing frequencies will be as specified in the testing and sampling frequency guide table in CMC [12.04.280\(P\)\(9\)](#). In addition, the city will be notified before each phase of sidewalk, curb and gutter construction commences. [Ord. 819B § 13, 2007; Ord. 785B § 14 (2C), 2005.]

#### **12.04.300 Illumination.**

A. General. New commercial or residential subdivisions, short plats or property development along the locations designated in Article II of this chapter will provide streetlights in accordance with these standards for such improvements of the city and they will be owned and operated by the city.

B. Design Standards. A street lighting plan submitted by the applicant and approved by the director of public works or designated consultant will be required for all streetlight installations. Type of installation will be as set forth in the most recent edition of WSDOT/APWA Standard Specifications, the illumination standards table in this section, and as directed by the city.

All public streetlight designs will be prepared by an engineering firm, licensed by the state of Washington, and capable of performing such work. All developments will submit the lighting plan on a separate plan sheet. After the system is completed and approved, a set of as-built mylars will be submitted to the city as a permanent record.

Streetlights will be located in accordance with the design criteria contained herein, and as approved by the director of public works or designated consultant. In addition, intersections will be illuminated to one and one-half times the highest foot-candle requirement of the streets surrounding the intersection. Exception: in residential and intermediate classes, local and collector streets intersecting other local and collector streets will not be subject to the one and one-half times illumination factor, provided a luminaire is placed at the intersection. Energy-efficient fixtures will be incorporated into the streetlight system whenever practical. Poles will be opposite across the roadway or on one side of the roadway.

For the purposes of this section, area classes are determined by zoning as follows:

### **Commercial**

Multifamily, high density  
 Central business district  
 Freeway commercial  
 General commercial  
 Neighborhood commercial

**Industrial**

Heavy industrial  
 Light industrial

**Intermediate**

Essential public facilities  
 Commercial office/mixed use

**Residential**

Single-family, low density  
 Single-family, medium density  
 Multifamily, medium density

<b>Average Maintained Horizontal Illumination (Foot-Candles)</b>				
<b>Road Class</b>	<b>Area Class</b>			
	<b>Residential</b>	<b>Intermediate</b>	<b>Industrial</b>	<b>Commercial</b>
Local	0.2	0.6	N/A	N/A
Collector	0.5	0.7	0.8	0.9
Arterial	0.7	1.0	1.2	1.4
Boulevard	0.7	1.0	1.2	1.4

Uniformity Ratio:	6:1 average: minimum for local
	4:1 average: minimum for collector
	3:1 average: minimum for arterial and boulevard
Dirt Factor:	0.85
Lamp Lumen Depreciation Factor:	0.73
Weak Point Light:	0.2 fc (except local residential street)

Line loss calculations will show no more than a five percent voltage drop in any circuit from the source to the most distant luminaire. Branch circuits will serve a minimum of four luminaires.

Pole foundations will be per Standard Drawing 2-16. Luminaire poles will conform to Section 9-29 of the WSDOT Standard Specifications, except as modified herein. Light standards will be tapered aluminum with satin ground finish. The diameter at the base of

the pole will not exceed nine inches and the minimum thickness of the pole will be one-fourth inch. Mounting height will be 30 feet. Pole arms will be davit style, single-arm, minimum 10 feet in length. Longer davit arms may be allowed or required for site-specific design issues. The shaft will be heat treated after welding on the based flange to produce T6 temper. The pole and davit arm will be designated to support streetlight luminaires with a minimum weight of 60 pounds and a minimum effective protected area (EPA) of one and one-half square feet. Poles will be designed to withstand a 100 mph (AASHTO) wind loading with a 1.3 gust factor with luminaire and mast arm attached, without permanent deformation or failure. Minimum wall thickness will be 0.188 inches. Poles will be equipped with a removable metal ornamental pole cap secured to the shaft with stainless steel screws. Poles will have a minimum three-and-one-half-inch by six-inch hand hole, with cover, near the base and will be equipped with a grounding lug. The pole will also be equipped with a dedicated 120V, 20 AMP circuit with a recessed weatherproof GFI power receptacle, that meets all applicable guidelines and standards. The receptacle will be located 13 feet above the base of the pole.

All luminaires will be flat lens, medium cut off, IES Type II distribution and will comply with all standards as established by Public Utility District No. 1 of Lewis County. Unless otherwise required by PUD No. 1, luminaires will be: 200 watt, catalog No. GEMDCL2OSA11FMC31. Higher wattage luminaires may be considered if necessary to achieve lighting requirements.

All streetlight electrical installations including wiring conduits and power connections will be located underground.

New street lighting will be designed and installed in such a way as to blend with any utility pole-mounted lighting that may exist along the frontage of adjacent properties, but also to accommodate future integration of conforming streetlights along the roadway. To this end, when streetlight(s) are required along a property, conduit(s) and junction box(es) will be installed along the entire frontage, as appropriate, to allow for the interconnection of future streetlight installations. This requirement may be waived with approval of the director of public works, based on the site-specific conditions of the property in question.

Alternate streetlight designs may be allowed or required by the city to accommodate the unique characteristics of a particular street or neighborhood. For example, special lighting may be deemed appropriate along a street that is part of a designated historic district. The use of any alternate street lighting must be approved in writing by the director of public works or designated consultant.

The general notes that follow will be included on any plans dealing with streetlight design, in addition to all other applicable requirements.

### **General Notes (Streetlight Construction)**

1. All workmanship, materials and testing will be in accordance with WSDOT/APWA, MUTCD, NEC or city of Chehalis development engineering standards unless otherwise specified below. In cases of conflict, the most stringent guideline will apply.

2. Washington State electrical permits and inspections are required for all street lighting installations within the city of Chehalis. The contractor is responsible for obtaining said permits prior to any type of actual construction.

3. A clearly marked service disconnect will be provided for every lighting circuit. The location and installation of the disconnect will conform to National Electrical Code (NEC) and these standards. The photo controls window will face north unless otherwise directed by the city. The service disconnect will not be mounted on the luminaire pole. The service disconnect will be of a type equal to a Milbank CP3B-11115 AALSP2 service, 120/240 VAC, 1 3W, Caltrans Type 3B with contactors, photo controls and test switch. All service disconnects will be used to fullest capacity, i.e., maximum number of luminaires per circuit.

4. All lighting wire will be copper with a minimum size of #8. All wire will be suitable for wet locations. All wire will be installed in schedule 80 PVC conduit with a minimum diameter of one and one-fourth inches. A bushing or bell-end will be used at the end of a conduit that terminates at a junction box or luminaire pole. Conductor identification will be an integral part of the insulation of the conductors throughout the system, i.e., color-coded wire. Equipment grounding conductor will be #8 copper. All splices or taps will be made by approved methods utilizing epoxy kits rated at 600 volts, minimum (i.e., 3-M 82-A2). All splices will be made with pressure type connectors (wire nuts will not be allowed). Direct burial wire will not be allowed. All other installation will conform to NEC, WSDOT/APWA, and MUTCD standards.

5. Each luminaire pole will have an in-line, fused, watertight electrical disconnect located at the base of the pole. Access to these fused disconnects will be through the hand-hole on the pole. The hand-hole will be facing away from on-coming traffic. Additional conductor length will be left inside the pole and pull or junction box equal to a loop having a diameter of one foot. Load side of in-line fuse to luminaire head will be cable and pole bracket wire, two-conductor, 19-strand copper #10 and will be supported at the end of the luminaire arm by an approved means. Fuse size, disconnect installation and grounding in pole will conform to NEC standards.

6. Approved pull boxes or junction boxes will be installed when conduit runs are more than 200 feet. In addition, a pull box or junction box will be located within 10 feet of each luminaire pole and at every road crossing. Boxes will be clearly and indelibly marked as lighting boxes by the legend "L.T." or "LIGHTING." See WSDOT Standard Plan J-11a.

7. All lighting poles will have tapered round shafts with a linear taper of between 0.125 and 0.14 inches per foot. In existing developed areas, the city may require a specific pole type to maintain consistency within the developed area.

8. Cement concrete bases will follow WSDOT Standard Plan J-1b, Sheet 1, Foundation Detail. Conduit will extend between three and six inches above the concrete base.

9. All streetlights will include a recessed 120V weatherproof GFI receptacle that meets all applicable guidelines and standards. The receptacle will be located 13



feet above the base of the pole. All receptacles will be on a dedicated circuit separate from the lighting circuit.

10. Any modification to approved plans will be reviewed and approved by the director of public works prior to installation.

C. Staking. All surveying and staking will be performed by an engineering or surveying firm licensed by the state of Washington and capable of performing such work. A preconstruction meeting will be held with the city prior to commencing staking. The city must inspect all staking prior to construction.

The minimum staking of luminaires will be as follows:

1. Location and elevation to the center of every pole base;
2. Location and elevation of each service disconnect.

D. Testing. All luminaires will be subject to an electrical inspection. Lamp, photo controls, and fixtures will be warranted for a period of one year. [Ord. 819B § 13, 2007; Ord. 785B § 14 (2D), 2005.]

#### **12.04.310 Signals.**

A. General. Signals will be installed per the requirements set forth herein. This work will consist of furnishing and installing a complete and functional traffic control system of controllers, signals and appurtenances as required by the city.

B. Design Standards. Signal systems will be designed in accordance with the specifications as set forth in the WSDOT Design Manual and the WSDOT/APWA Standard Specifications unless otherwise authorized by the city.

An engineering firm licensed by the state of Washington and capable of performing such work will prepare all public signal designs.

C. Induction Loops. Induction loops will be constructed per WSDOT/APWA Standard Specification 8-20.3(14)C, WSDOT Standard Plan J-8a, and the following:

1. Loops will not be cut into final lift of new asphalt.
2. Loops will be preformed in crushed surfacing top course (CSTC) before paving or will be cut in existing asphalt or leveling course to subbase before intersection is overlaid.

D. Controller. Controllers will be a microprocessor-based, solid-state, digital-timed NEMA, eight-phase traffic-actuated signal controller providing up to eight phases of signal control, internal preemption, time base coordination, internal time-of-day programming, and database management by an IBM PC. When required by the director of public works, the integration of traffic counting equipment will be accommodated by the controller.

For the purpose of interchangeability of parts and simplification of maintenance, the city of Chehalis has standardized its traffic signal controllers. Only the Traconex Model Number HMP-390 controller will be allowed or accepted.

E. Staking. All surveying and staking will be performed by an engineering or surveying firm licensed by the state of Washington and capable of performing such work. A preconstruction meeting will be held with the city prior to commencing staking. The city will inspect the staking prior to construction.

The minimum staking of signals will be as follows:

1. Location, with cut or fill, to center of all pole bases.

2. Location of junction box(es).
3. Location of all corners of controller base(s).
4. Location of service disconnects.
5. Location of conduit crossings.

F. Testing. Each signal will be subject to all necessary electrical inspections as well as the requirements set forth in the WSDOT Design Manual and the WSDOT/APWA Standard Specifications.

Controller and cabinet testing may be required by WSDOT District 4 Laboratory and/or the city of Chehalis. All specifications and material samples will be submitted to the city for review and approval prior to installation.

A signal system will not be approved or accepted by the city until the signal has performed correctly to the city's satisfaction for a 30-day check-out period as outlined in subsection (G) of this section.

G. Check-Out Procedure. The contractor will call for an intersection check-out after completing the installation of the controller cabinet and all other signal equipment complete with wiring connections. All parts and workmanship will be warranted for one year from date of acceptance.

New signals will operate without any type of failure for a period of 30 days. The contractor will have a qualified individual available to respond to system failure within 24 hours during the 30-day check-out period. Failure of any control equipment or hardware within the check-out period will restart the 30-day check-out period. [Ord. 785B § 14 (2E), 2005.]

#### **12.04.320 Roadside features.**

A. General. Miscellaneous features included herein will be developed and constructed to encourage the uniform development and use of roadside features wherever possible.

B. Design Standards. The design and placement of roadside features included herein will adhere to the specific requirements as listed for each feature, and, when applicable, to the appropriate standards as set forth in CMC [12.04.160](#).

C. Staking. All surveying and staking will be performed by an engineering or surveying firm licensed by the state of Washington and capable of performing such work. A preconstruction meeting will be held with the city prior to commencing staking. The city must inspect all staking prior to construction.

D. Testing. Testing will be required at the developer's or contractor's expense on all materials and construction as specified in the WSDOT/APWA Standard Specifications and with a frequency as specified in the WSDOT Construction Manual.

E. Survey Monuments. All existing survey control monuments that are disturbed, lost, or destroyed during surveying or construction will be replaced at the expense of the responsible builder or developer with the proper monument as outlined below by a land surveyor registered in the state of Washington.

1. Street Type: Major Arterial, Minor Arterial, Bus Routes and Truck Routes. A pre-cast concrete monument with cast iron monument case and cover installed per these standards is required.

2. Street Type: Commercial Collector, Neighborhood Collector, and Local Access. A cast-in-place concrete surface monument with sufficient ferrous metal embedded to allow for detection by a magnetic detection device per these standards is required. Cap will be "Berntsen RB Series" or brass plug marker.

### 3. Required Monument Locations.

- a. All intersections;
- b. At the PC and PTs of all horizontal curves;
- c. At PI of all horizontal curves of streets where the PI lies within the limits of the traveled roadway;
- d. At all corners, control points and angle points around the perimeter of subdivisions as determined by the city;
- e. At all section corners, quarter corners, and sixteenth corners within the right-of-way.
- f. The monument case will be installed after the final course of surfacing has been placed.

#### F. Bus Pullouts and Shelters.

1. General. Nothing in these standards will preclude the local transit provider from conducting on-street drop-offs and pickups. The intent of these provisions is to provide general guidelines for the installation of new bus facilities and ensure their proper design and integration with the city's transportation network. They must also meet the needs of the transit provider and the community at large.

When bus pullouts and/or shelters are deemed necessary in accordance with the provisions provided herein, the installation of these facilities will be the responsibility of the developer or builder.

2. Frequency and Spacing for Public Transit Stops. The city and local transit provider will consider the following general guidelines to determine frequency and spacing of improved stops on any given public transit route:

- a. When determining the physical location of a bus pullout and/or shelter, consideration will be given to vehicle and pedestrian safety, impacts to adjacent property owners, and operational efficiency of the transit service.

- b. Bus pullouts can be initially located at an average of four to six stops per route-mile along local residential segments of a route.

- c. Additional stops may be added if warranted, but will not exceed the basic stop spacing guidelines of eight to 10 stops per mile and no two stops may be located within 600 feet of one another.

- d. Site designs for businesses, residential subdivisions, and multifamily developments along transit routes will accommodate transit use. This may include the location of a building entrance near a transit stop, pedestrian walkways, sheltered or unsheltered transit stops, and/or a bus pullout.

3. Placement and Design of School Bus Stops. The city and the Chehalis School District will use the following criteria to jointly determine the placement and design of school bus stops:

- a. A school bus stop will be required for each new residential subdivision or apartment complex where school children are to be boarding or disembarking, unless it is determined that adjacent facilities already exist for the site.

- b. Location of school bus stops will be designed with safety as a paramount concern. Major arterials with high traffic counts should be avoided when possible and only used when bus pullouts are available and significant protection is provided for children.

c. School bus stops will be designed to complement the residential environment and provide convenient location and access for neighborhood children including sidewalk access.

d. Every effort will be made to make school bus stops and sidewalk access to school bus stops a safe and friendly pedestrian environment.

e. The local transit provider and the Chehalis School District should make every effort to coordinate the location of bus stops. However, separate bus facilities may be necessary for both service providers.

4. Physical Location Requirements. The physical location of all bus pullouts will be primarily determined by the following considerations: maximizing safety, operational efficiency, and minimizing impacts to adjacent property. Bus pullouts may be required on all arterial and commercial collector roads for safe bus berthing and to minimize impacts of bus stops on traffic flow. Additionally, bus pullouts may be required on local access roads if road geometry requires, such as determined by the public works department. Maintaining adequate separation between driveways/intersections and bus pullouts can increase the safety and efficiency of both the roadway and the transit service. When locating a bus pullout in reference to existing driveways or a driveway in reference to an existing bus pullout, the following guidelines will be taken into consideration:

a. On local roads, bus pullouts will be located a minimum of 55 feet (75 feet preferred) from any driveway as measured from the closest driveway edge to the pullout loading area. On arterial roadways, bus pullouts will be located in accordance with the site distance requirements noted in CMC [12.04.280\(M\)](#). These location requirements will serve as a general guide for bus pullout installations.

Alternative distances may be considered if sufficient engineering data is provided demonstrating that adequate site distance is maintained, pedestrian safety is protected and vehicular traffic is not hindered. The final determination for a bus pullout location must be approved by the director of public works.

b. Bus pullouts should not be located where the transit vehicle will block sight distance from a driveway or intersection.

c. Driveways should not be located within the taper of the pullout.

5. Transit and School Bus Stop Signage. All designated public transit and Chehalis School District bus stops will be identified in some fashion. This may include pavement marking and bus stop signs. Contact the local transit provider for details on their sites.

6. Shelters. Passenger shelters may be required at bus pullouts and transfer centers. Shelters may also be required at bus stops as determined by the local transit provider and the public works department.

Passenger shelters for public transit sites and Chehalis School District sites will be transparent for passenger visibility and safety, provide protection from the elements, and be reasonably vandalism-resistant for easy maintenance.

7. Shelter Installations. When bus shelters are required, they will be installed in the following manner:

a. The developer/builder will provide a concrete pad approximately 12 by 10 feet and six inches thick. The pad will extend in from the curb or edge of the

pavement at a specific location designated by the city. The pad will be constructed in accordance with the design standards for sidewalks as noted in CMC [12.04.290](#).

b. Upon completion of the pad, the local transit provider will construct the shelter. The developer/builder will be responsible for all appropriate costs associated with the shelter installation. A final certificate of occupancy will not be issued until all shelter costs have been reimbursed to the transit provider.

8. Design Standards. A pedestrian-friendly environment will be designed into all bus stop locations and surrounding service area to make it user-friendly and safe. The following criteria will be applied to bus stop facilities for new developments:

a. Provide paved walkways with a hard all-weather surface linking various sections of subdivisions and developments to peripheral streets with bus stops.

b. Provide access ramps and other facilities consistent with barrier-free design standards along walkways leading to bus stops.

c. Separate roads and parking areas from pedestrian pathways by grade separations, landscaping, and other devices. A minimum four- to six-foot planting strip will be provided to buffer sidewalks or walkways from streets and parking areas around bus stops and shelters.

d. Provide pedestrian-friendly features such as lighting, signs, and trash receptacles as warranted by anticipated use.

e. New development street systems should be designed to minimize pedestrian travel to bus stops.

G. Mailboxes. During construction, existing mailboxes will be accessible for the delivery of mail or, if necessary, moved to a temporary location. Temporary relocations will be coordinated with the U.S. Postal Service. The mailboxes will be reinstalled at the original location or, if construction has made it impossible, to a location as outlined below and approved by the U.S. Postal Service.

Location:

1. Bottom or base of box will be 36 to 42 inches above the road surface.

2. Front of mailbox will be 18 inches behind vertical curb face or outside edge of shoulder.

3. New Developments. Clustered mailboxes are required (contact the U.S. Postal Service for details). Refer to Standard Drawing 2-18.

4. Mailboxes will be set on posts strong enough to give firm support, not to exceed four-by-four-inch wood or one-and-one-half-inch-diameter pipe, or a material and design with comparable breakaway characteristics.

H. Guard Rails. For purposes of design and location, all guard rails along roadways will conform to the criteria of the Department of Transportation Design Manual, as may be amended or revised.

I. Retaining Walls.

1. General. Rock walls may be used for erosion protection of cut or fill embankments up to a maximum height of eight feet in stable soil conditions that will result in no significant foundation settlement or outward thrust upon the walls. For heights over six feet or when soil is unstable, structural wall of acceptable design stamped by a licensed structural engineer will be used.

In the absence of such a rock wall design, walls having heights over six feet or walls constructed in conditions where soil is unstable are required to be a

preengineered structural wall having a design approved by the public works department (or the community development director if outside the right-of-way). Structural walls will be designed by a professional engineer licensed in the state of Washington and qualified in retaining wall design. Structural walls require issuance of a building permit from the community development department prior to construction.

Any rock wall over 30 inches high in a fill section will require the design of a geotechnical engineer. The geotechnical engineer will continuously inspect the installation of the wall as it progresses and submit inspection reports, including compaction test results and photographs taken during construction, documenting the techniques used and the degree of conformance to the geotechnical engineer's design.

Terraced walls will be reviewed and approved on a site-specific basis. Use of terraced walls in the right-of-way must be approved by the public works department or designated consultant.

2. Material. The rock material will be as rectangular as possible. No stone will be used which does not extend through the wall. The rock material will be hard, sound, durable and free from weathered portions, seams, cracks and other defects. The rock density will be a minimum of 170 pounds per cubic foot.

3. Foundation. The rock wall will be started by excavating a trench with a depth below subgrade of one-half the base course or one foot, whichever is greater.

4. Rock Placement. Rock selection and placement will be such that there will be minimum voids and, in the exposed face, no open voids over six inches across in any direction. The final course will have a continuous appearance and will be placed to minimize erosion of the backfill material. The larger rocks will be stable and have a stable appearance. The rocks will be placed in a manner such that the longitudinal axis of the rock will be at right angles or perpendicular to the rockery face. The rocks will have all inclining faces sloping to the back of the rockery. Each course of rocks will be seated as tightly and evenly as possible on the course beneath. After setting each course of rock, all voids between the rocks will be chinked on the back with quarry rock to eliminate any void sufficient to pass a two-inch square probe.

5. Backfill. The wall backfill will consist of one-and-one-half-inch washed rock or as specified by a licensed engineer. This material will be placed to a 12-inch minimum thickness between the entire wall and the cut or fill material. The backfill material will be placed in lifts to an elevation approximately six inches below the top of each course of rocks as they are placed, until the uppermost course is placed. Any backfill material on the bearing surface of one rock course will be removed before setting the next course.

6. Drainage. Perforated drainage pipe and filter fabric will be installed as per Standard Drawing 2-23. This pipe requirement may be waived by the director of public works if the developer is able to demonstrate, to the city's satisfaction, that no subsurface water problems exist.

J. Street Trees. In order for developers or property owners to plant trees, shrubbery or other vegetation that may attain a height of more than 30 inches within the right-of-way, they must first apply for and obtain a right-of-way permit from the city. The application must include information on the type of tree or plant and the proposed location placement.

Certain varieties of trees are prohibited from being planted within a city right-of-way. Such trees are excluded from the right-of-way to protect utilities and infrastructure or to

minimize visual obstructions and interference. Trees not to be planted within a city right-of-way specifically include the following:

Alder; apple (fruiting); ash, mountain; birch, white; cherry (fruiting); chestnut; cottonwood; elm, American; hawthorne; London plane; maple, big leaf; maple, Oregon; maple, silver; oak, pine; pagoda; pear (fruiting); plum (fruiting); poplar; sycamore; walnut; willow; and any other species of tree with a propensity to produce large or extensive root systems that may interfere with or damage underground utilities or public infrastructure including streets, curbing, and sidewalks.

Also prohibited from being planted within the right-of-way are any other species of plants or trees that will create an obstruction or potential obstruction to traffic, pedestrian visibility or safe public use of the right-of-way.

K. Parking Lots. A right-of-way permit is required prior to surfacing a nonsurfaced designated parking area that will access a public right-of-way.

Storm water retention will be provided and will follow the criteria as set forth in the storm water management plan and as addressed in Article IV of this chapter.

Parking lot circulation and signing needs will be met on site. The public right-of-way will not be utilized as part of a one-way parking lot flow.

All requirements for construction of parking lots will be determined through the development plan review process, including capacity and configuration. Parking lot ingress and egress will be evaluated to determine traffic controls necessary to ensure vehicle safety to and from the public right-of-way.

Parking lot surfacing materials must meet the requirements for a permanent all-weather surface. Asphalt concrete pavement and cement concrete pavement satisfy this requirement and are approved materials. Gravel surfaces are not acceptable or an approved surface material type. Combination grass/paving systems are approved surface material types; however, their use requires submittal of an overall parking lot paving plan showing the limits of the grass/paving systems and a description of how the systems will be irrigated and maintained. [Ord. 819B § 13, 2007; Ord. 810B § 6, 2006; Ord. 785B § 14 (2F), 2005.]

#### **12.04.330 Traffic impact analysis.**

A. General. A traffic impact analysis (TIA) is a specialized study of the impacts that a specific type and size of development will have on the surrounding transportation system. The TIA is an integral part of the development review process. It is specifically concerned with the generation, distribution, and assignment of traffic to and from a new development or a redevelopment. "New development" is defined as any site action involving SEPA. This may include previous development on a site with consideration to cumulative impacts for the purpose of making a SEPA threshold decision. Redevelopment will include expanded or increased development, or use or occupancy of a building or site that has been dormant for a period of more than five years.

For the purposes of this document, the term "proposed project" will be used to refer to both new development and redevelopment.

These guidelines have been prepared to establish the requirements for a TIA. If a TIA is required for a project, the public works department or designated consultant will be the city contact for matters relating to the TIA. The public works department or designated consultant will also be responsible for reviewing and accepting TIAs as well as approving measures to mitigate impacts.

## B. When Required.

1. The need for a TIA will be based on the size of the proposed development, existing street and intersection conditions, traffic volumes, accident history, community concerns, and other pertinent factors associated with the proposed project.

2. A TIA will be required if a proposed development meets one or more of the following conditions:

a. The proposed project generates more than 10 vehicles in the peak direction of the peak hour on the adjacent streets and intersections. This includes the summation of all turning movements that affect the peak direction of traffic.

b. The proposed project generates more than 25 percent of the site-generated peak hour traffic through a signalized intersection or "critical" movement at a nonsignalized intersection.

c. The proposed project is within an existing or proposed transportation benefit area. This may include transportation benefit districts (TBD), local improvement districts (LID), or local/state transportation improvement areas programmed for development reimbursements.

d. The proposed project may potentially affect the implementation of the street system outlined in the transportation element of the comprehensive plan, the six-year transportation improvement program, or any other documented transportation project.

e. If the original TIA was prepared more than two years before the proposed project completion date.

f. The increase in traffic volume as measured by ADT, peak hour, or peak hour of the "critical" movement is more than 10 percent.

3. Even if it is determined that a TIA is not required, the director of public works or designated consultant may require the developer to have a trip generation study (TGS) conducted. TGSs will be used to forecast project-generated traffic for an established future horizon.

C. Qualifications for Preparing TIA Documents. The TIA will be prepared by an engineer licensed in the state of Washington and with special training and demonstrated experience in traffic engineering. The applicant will provide the public works department or designated consultant with the credentials of the individual(s) selected to perform the TIA for approval prior to initiating the analysis.

D. References. In conducting TIAs and TGSs, the method for determining capacity will be as described in the most recent version of the "Transportation Research Board Highway Capacity Manual," and the method for determining project-generated traffic volumes will be as forecasted using the most recent edition of "Institute of Transportation Engineers Trip Generation Manual."

E. Scope of Work. The level of detail and scope of work of a TIA may vary with the size, complexity, and location of the proposed project. A TIA will be a thorough review of the immediate and long-range effects of the proposed project on the city's transportation system. The analysis will include the following elements, as applicable:

1. Provide a reduced copy of the site plan, showing the type of development, street system, right-of-way limits, access points, and other features significant to the city's transportation system. The site plan will also include pertinent off-site information



such as locations of adjacent intersections and driveways, land-use descriptions, and other features of significance.

2. Provide a vicinity map of the project area showing the transportation system to be impacted by the development.

3. Discuss specific development characteristics such as the size and type of development proposed (single-family, multifamily, retail, industrial, etc.), internal street network, parking spaces provided, zoning, and other pertinent factors attributable to the proposed project.

4. Discuss project completion and occupancy schedule for the proposed project. Identify horizon year(s) for traffic analysis purposes.

#### F. Existing Conditions.

1. Discuss street characteristics including functional classification, bicycle path corridors and traffic control at study intersections, number of traveled lanes, lane width, and shoulder treatment. A figure should be used to illustrate existing transportation facilities. Refer to the Sample TIA Figure in this section.

2. Identify safety and access problems including discussions on accident history, sight distance restrictions, traffic control, and pedestrian conflicts.

3. Utilize all available traffic data from the city of Chehalis and surrounding jurisdictions, if applicable. If data is unavailable, the individual or firm preparing the TIA will collect the necessary data to supplement the discussions and analysis in the TIA.

4. Conduct manual peak hour turning movement counts at study intersections if traffic volume data is more than two years old. A copy of the reduced data will be included with the TIA. The peak hour(s) to be counted and analyzed will be the time period(s) when the combination of proposed project traffic and existing traffic is highest. A study intersection is any arterial/collector intersection impacted by 10 or more proposed project trips during the peak hour(s) analyzed by the TIA. The public works department or designated consultant may require that the study also include additional intersections or areas.

5. A figure will be prepared showing existing average daily traffic (ADT) and peak hour traffic volumes on the adjacent streets and intersections in the study area. Complete turning movement volumes will be diagrammed or illustrated and included in the TIA. The figure will represent the existing traffic volumes for analysis purposes. Refer to the Sample TIA Figure in this section.

#### G. Development Traffic.

1. This element of the TIA will identify the limits of the study area. The study area will include all pertinent intersections and streets impacted by development traffic.

2. The threshold requirement of development traffic of 10 vehicles in the peak direction of the peak hour on the adjacent streets and intersections will apply. The threshold requirement of the development generating 25 percent or more of site traffic through a signalized intersection or "critical" movements at a nonsignalized intersection will also apply. Each arterial/collector intersection and street impacted as described will be included in the study area for analysis purposes.

3. A figure illustrating the proposed trip distribution for the proposed project will be included in the TIA. The TGS will be displayed in a tabular format on the figure with peak hour traffic volumes assigned to the study area in accordance with the trip distribution.

a. Trip Generation. Site-generated traffic of proposed projects will be estimated using the latest edition of the "Institute of Traffic Engineers Trip Generation Manual." Variations of trip rates will require the approval of the public works department or designated consultant. Trip rate equations will be used for all land use categories where applicable. Average trip rates will be allowed for those land uses without trip rate equations. Site traffic will be generated for daily a.m. and p.m. peak hour periods. A "pass-by" traffic volume discount for commercial centers will not exceed 25 percent unless approved by the public works department or designated consultant.

b. Trip Distribution. Trip distribution methodology will be clearly defined and discussed in detail in the TIA. For large development projects, the public works director may require a regional trip distribution map. The TIA will identify other transportation modes that may be applicable, such as transit use, bicycle and pedestrian facilities.

#### H. Future Traffic.

1. Future Traffic Conditions Not Including Site Traffic. Future traffic volumes will be estimated using information from existing transportation forecasts or models, other planned or programmed "on-line" development, and/or transportation projects, or by applying an annual growth rate to the existing traffic volumes as defined in the Chehalis comprehensive plan. The future traffic volumes will be representative of the horizon year(s) for project development. Forecasted nonproject traffic will be added to existing traffic and illustrated in a figure.

2. Future Traffic Conditions Including Site Traffic. The site-generated traffic will be assigned to the street network in the study area based on the approved trip distribution. The site traffic will be combined with forecasted traffic volumes, not including site traffic, to show the total traffic conditions estimated at development completion and at the future horizon year. A figure will be required showing daily and peak period turning movement volumes for each traffic study intersection. Refer to the Sample TIA Figure in this section. In addition, a figure will be prepared showing future traffic conditions, not including site traffic volumes, with site-generated traffic added to the street network.

Unless the city specifically authorizes another future horizon year for a development, the initial target year for determining future traffic will be five years after the development has been occupied or in full operation for 12 months.

#### I. Traffic Operations.

1. A level of service (LOS) analysis will be conducted for each screen line in the study area. The screen lines and level of service information will be developed in conjunction with the Chehalis comprehensive plan. The methodology and procedures for conducting the capacity analysis will follow the guidelines specified in the most recent version of the "Transportation Research Board Highway Capacity Manual." The LOS for each screen line will include the following conditions:

- a. Existing peak hour traffic volumes;
- b. Future traffic volumes not including site traffic;
- c. Future traffic volumes including site traffic.

2. LOS results for each traffic volume scenario will be summarized in a single table. The LOS table will include results for a.m. and p.m. peak periods, if applicable. The table will show LOS conditions with corresponding vehicle delays for signalized intersections and reserve capacity or delay for the "critical" movements at nonsignalized

intersections. For signalized intersections, the LOS conditions and average vehicle delay will be provided for each approach and the intersection as a whole, in an appendix that contains all LOS calculation sheets.

3. The LOS analyses for existing signalized intersections will include existing phasing, timing, splits and cycle lengths in the analysis as observed and measured during the peak hour traffic periods.

4. If the proposed project is scheduled for completion in phases, the TIA will conduct a LOS analysis for each separate development phase. The incremental increases in site traffic from each phase will be included in the LOS analysis for each proceeding year of development completion. A figure will be required for each horizon year of phased development.

5. If the proposed project impacts a coordinated traffic signal control system currently in operation, the TIA will include an operational analysis of the system. Timing plan and proposed modifications to the coordination system will also be required. For nonsignalized intersections, the "Highway Capacity Manual" methodology will be used.

6. The computer software package(s) used for capacity analysis applications will be approved by the public works department or designated consultant. The public works department or designated consultant may require that a copy of the computer worksheets, along with a three-and-one-half-inch floppy disk of each capacity analysis, be submitted concurrently with the TIA to the public works department.

#### J. Mitigation.

1. The TIA will include a proposed mitigation plan. The mitigation may be either the construction of necessary transportation improvements or contributions to the city for the proposed project's fair share cost of identified future transportation improvements, as identified in the city's comprehensive plan. Levels of service "E" and "F" will be used as the threshold for determining appropriate mitigating measures on roadways and intersections in the study area. Mitigating measures will be required to the extent that the transportation facilities operate at a LOS "C" (LOS-C) condition or better upon completion of the development.

2. The following guidelines will be used to determine appropriate mitigating measures of traffic impacts generated by proposed projects:

a. The cost for the mitigation will be entirely borne by the proposed project. However, in the event that more than one development is being proposed within the study area, a latecomers agreement for reimbursement of mitigation costs may be proposed by the project under consideration.

b. City projects involving transportation facilities programmed for improvements, and having an adverse traffic impact, will be mitigated by providing a proportionate share of the local costs for the improvements. This share will be based on the percentage of proposed project traffic generated through the intersection. The percentage will be based on the total projected peak hour traffic volumes for the horizon year of the transportation facility, or as defined by the ordinance establishing the cost-sharing mechanism for off-site street improvements.

c. Nonsignalized intersections that currently operate at less than level of service "C" (LOS-C) will be analyzed for traffic signal and intersection improvements. If three or more traffic signal warrants are satisfied, signal and intersection improvements will be required as a mitigating measure for the proposed project. If at least three signal

warrants are not satisfied by the proposed project's horizon year, the TIA will determine if traffic signal warrants and intersection improvements would be needed within a five-year period after the proposed project's horizon year. If so, the proposed project would then be required to provide a proportionate share of the cost of future traffic signal and intersection improvements.

3. When an off-site street improvement(s) is not scheduled to be installed in the near future, the city may allow a developer required to share in the costs of such improvement(s) to post a bond in the amount of the developer's pro rata share of such improvements. Any developer desiring to post a bond with the city in the amount of the pro rata share of improvement costs must submit a request in writing to the director of public works, along with all applicable justification or information supporting the request. The public works director will submit all request(s) to the city council, who will then make a decision at a regularly scheduled council meeting. All decisions made by the council will be considered final.

#### K. Mitigation Fee Calculation.

1. The formula for calculating a developer's mitigation fee or proportional share of an off-site street improvement is derived by dividing the project-generated traffic by the future traffic with the project. In order to determine the developer's pro rata costs of an off-site street improvement, this value is multiplied by the project costs. Mathematically this formula is written as follows:

$$\text{PGT/FTP} \times \text{PC} = \text{DMF}$$

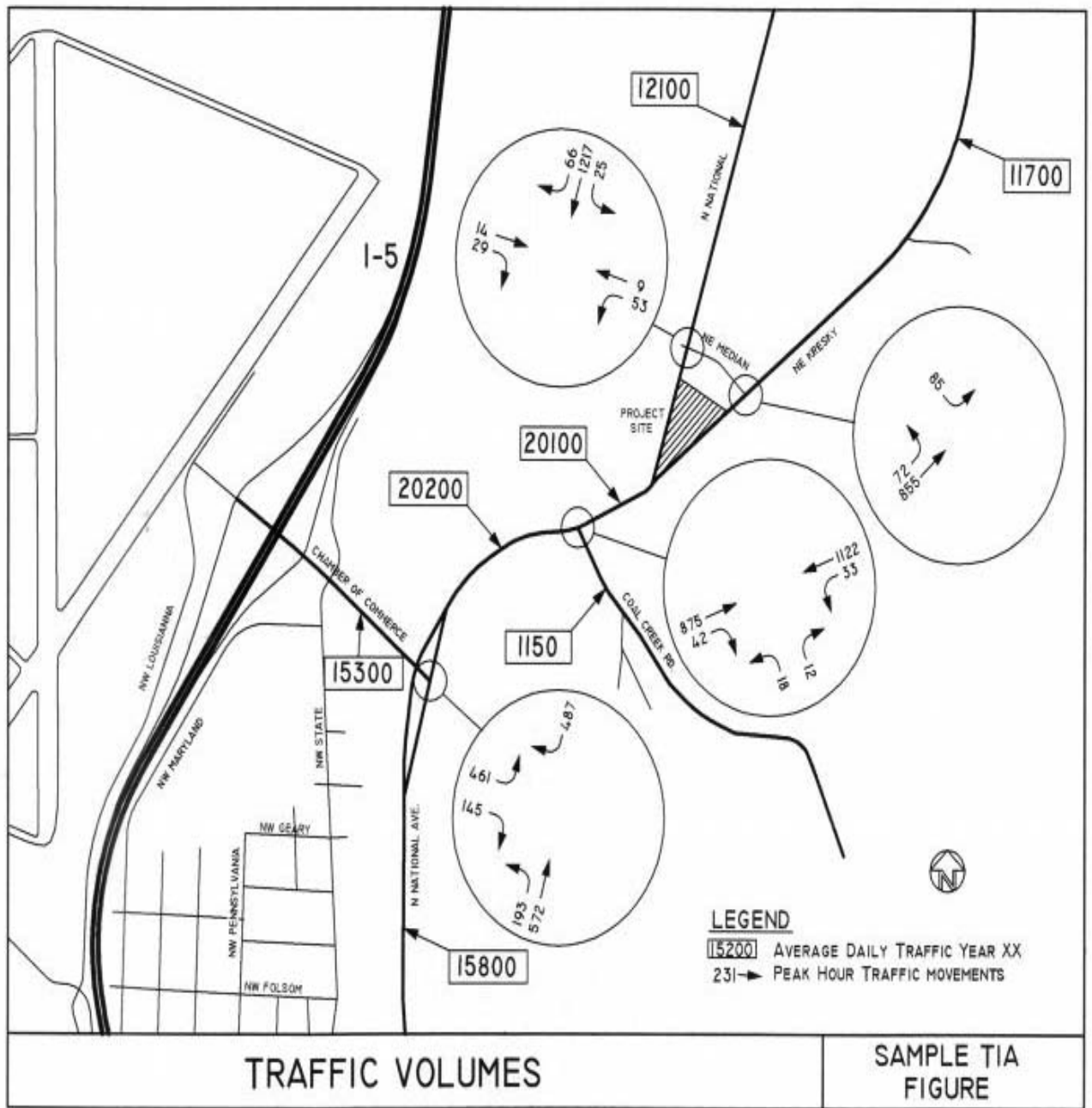
PGT = Project-generated traffic

FTP = Future traffic with the project

PC = Project cost

DMF = Developer's mitigation fee

2. Participation Threshold. The city has established a participation threshold of 10 trips per peak hour. The 10 trips per peak hour sets the minimum level at which a developer will be required to participate. As part of the TIA and/or TGS, intersections and traffic locations will be identified when there will be or are 10 or more new peak hour generated trips.



[Ord. 819B § 13, 2007; Ord. 785B § 14 (2G), 2005.]

**Article IV. Storm Drainage and Erosion Control**

**12.04.340 Storm water management.**

A. General. The standards established by this article are intended to represent the minimum standards for the design and construction of storm drainage facilities.

The city of Chehalis storm water management plan and the most recent version of the “Stormwater Management Manual for the Puget Sound Basin” documents are considered a part of this article as well as the city development engineering standards, except as supplemented herein. The storm water management plan sets forth the minimum drainage and erosion control requirements as supplemented herein.

B. Design Standards. The design of storm drainage and/or retention/detention systems will depend on their type and local site conditions. The design elements of storm drainage systems will conform to these standards and follow current design practice as set forth in the city of Chehalis storm water management plan. Properties will not be developed in such a way as to discharge storm water onto adjacent lots.

The general notes that follow will be included in all plans dealing with storm water conveyance and/or detention.

### **General Notes (Storm Drain Construction)**

1. All workmanship and materials will be in accordance with the city of Chehalis development engineering standards and the most recent copy of the State of Washington Standard Specifications for Road, Bridge and Municipal Construction (WSDOT/APWA).
2. Temporary erosion/water pollution measures will be required in accordance with the storm water management plan and Section 1-07.15 of the Standard Specifications.
3. Comply with all other permits and requirements of the city of Chehalis and/or other governing authorities or agencies.
4. A preconstruction meeting will be held with the public works department and the engineering division prior to the start of construction.
5. All storm mains and retention/detention areas will be staked for grade and alignment by an engineering or surveying firm capable of performing such work.
6. Storm drainpipe will meet the following requirements:
  - a. Plain concrete pipe conforming to the requirements of AASHTO M 86, Class 2.
  - b. Reinforced concrete pipe conforming to the requirements of AASHTO M 170.
  - c. PVC pipe conforming to ASTM D3034 SDR 35 or ASTM F794 or ASTM F679 Type 1 with joints and gaskets conforming to ASTM D3212 and ASTM F477.
  - d. Ductile iron pipe conforming to the requirements of AWWA C151, thickness class as shown on the plans.
  - e. High-density polyethylene smooth interior pipe conforming to AASHTO M 252 types or AASHTO M 294 Type S, with a gasketed bell and spigot joints.
  - f. Aluminized steel helical or spiral rib pipe in diameters of 30 inches or greater, with a Manning’s value of 0.020 or less.

7. Special structures, oil/water separators and outlet controls will be installed per plans and manufacturer's recommendations.
8. Provide traffic control plan(s) as required in accordance with MUTCD to the public works department. Traffic control plans must be approved prior to the start of construction.
9. Call the Utilities Underground Location Center at 1-800-424-5555 a minimum of two business days prior to any excavations.
10. Where connections require "field verifications," the contractor will expose connection points and verify necessary fittings two business days prior to initiating the work.
11. All storm lines and catchbasins will be high-velocity cleaned and pressure tested in accordance with Divison 7 of the Standard Specifications prior to paving. Hydrant flushing of the lines is not an acceptable cleaning method. Testing of the storm main will include television inspection at the contractor's expense. The public works department or designated consultant will determine whether the inspection will be performed by the city or by a representative of the contractor under the city's direction. Testing will take place after all underground utilities are installed and compaction of the roadway subgrade is completed.
12. Fill placement will not be allowed in any open channel used for storm conveyance without written approval from the public works department or designated consultant.
13. Contractors and/or property owners are required to channel water when installing or repairing a driveway. Water may be channeled with a berm or a pipe. Storm water must be diverted to city storm mains when possible.
14. The city must be notified a minimum of two business days in advance of a tap connection to an existing main. A representative from the city must be present at the time of the tap.
15. Prior to backfill, all mains and appurtenances will be inspected and approved by a city inspector. Approval does constitute final acceptance of the sewer line. The contractor will retain responsibility of repairing all deficiencies and failures revealed during required testing for acceptance and throughout the duration of the warranty. It is the contractor's responsibility to notify the city in advance of all required inspections. Any main or appurtenance backfilled prior to inspection will be reexcavated for inspection at no cost to the city.

Storm water conveyance and detention systems will be designed in accordance with the following design standards table:

<b>Hydrologic Model</b>	
Conveyance Design	
<50 acres	Rational Method

>50 <200 acres	SCS-Based Hydrograph Method
>200 acres	Continuous Simulation Method
Detention Design	
<50 acres	SCS Unit Hydrograph Method with Level Pool Routing
>50 acres	Continuous Simulation Method
<b>Design Storm Frequency</b>	
Conveyance	Capacity to handle: 100-year storm event
Detention	Prevent peak flow increase: 100-year storm event
	Evaluation of erosion control: 2-year storm event and 10-year storm event
<b>Design Storm Duration/Distribution</b>	
Hydrograph Method	6- and 24-hour durations
SCS Unit Hydrograph Method	6- and 24-hour durations SCS Type 1A distribution
Rational Method	Time of concentration Constant rainfall intensity

### C. Conveyance.

1. Pipe. Storm drainpipe within a public right-of-way or easement will be sized to carry the maximum anticipated runoff from the contributing area. The calculations of anticipated runoff and pipe sizing will be developed by a professional engineer licensed in the state of Washington. The developer will provide the calculations and all associated information to the public works department.

2. The minimum main size will be 12-inch diameter; smaller pipe sizes will be considered on a case-by-case basis as approved by the public works department or designated consultant. Lateral lines may be six-inch diameter. The city may require the installation of a larger main if it is determined that a larger size is needed to serve adjacent areas or for future service. The installation of a larger main may allow the developer to seek partial reimbursement through a latecomers agreement (see Article II of this chapter for details).

3. All pipe used for storm mains will comply with one of the following types:

- a. Plain concrete pipe conforming to the requirements of AASHTO M 86, Class 2.
- b. Reinforced concrete pipe conforming to the requirements of AASHTO M 170.
- c. PVC pipe conforming to ASTM D3034 SDR 35 or ASTM F794 or ASTM F679 Type 1 with joints and gaskets conforming to ASTM D3212 and ASTM F477.
- d. Ductile iron pipe conforming to the requirements of AWWA C151, thickness class as shown on the plans.



e. High-density polyethylene smooth interior pipe conforming to AASHTO M 252 types or AASHTO M 294 Type S, with a gasketed bell and spigot joints.

f. Aluminized steel helical or spiral rib pipe in diameters of 30 inches or greater, with a Manning's value of 0.020 or less.

4. Channels. Open vegetated channels may be utilized for storm water conveyance when deemed appropriate by the public works department. Open channels located in a public right-of-way will be sized to carry the maximum anticipated runoff from the contributing area without exceeding the confines of the channel. In addition, when the end of the "new" conveyance system is within 20 feet of another piped drainage system, the "new" system will be extended through the open portion to complete the closed system. Extensions to complete closed drainage systems will only be required along the property where the "new" system originates, unless deemed necessary by the public works department or designated consultant.

5. When the flow of an open channel is interrupted by the construction of a driveway, the entire channel across the property will be enclosed with a piped system, unless deemed impractical by the public works department or designated consultant. However, the culvert under the driveway must be installed to accommodate closure of the ditch in the future. The channel enclosure may necessitate the inclusion of manholes and/or catchbasins. (For manholes please refer to CMC [12.04.580](#)(E) and Standard Drawing Nos. 5-1, 5-2, 5-12, and 5-14.)

D. Catchbasins. Maximum catchbasin spacing will be 300 feet on all street classifications. No surface water will cross any roadway to private property. Additional manholes and/or catchbasins may be required by the city to accommodate the maintenance needs of the storm system.

E. Staking.

1. All surveying and staking will be performed by an engineer or surveyor licensed by the state of Washington and capable of performing such work. Staking will be maintained throughout the construction operation.

2. A preconstruction meeting will be held with the city prior to commencing staking. The city will inspect all construction staking prior to construction.

3. The minimum staking of storm sewer systems will be as follows:

a. Stake centerline alignment every 25 feet with cuts and/or fills to bottom of trench.

b. Stake location of all catchbasins/manholes and other fixtures for grade and alignment.

c. Stake location, size and depth of retention/detention facility.

d. Stake finished grade of catchbasin/manhole rim elevation and invert elevations of all pipes in catchbasins, manholes, and those that daylight.

F. Trench Excavation. See CMC [12.04.510](#) for requirements regarding trench excavation.

G. Backfilling. See CMC [12.04.530](#) for requirements regarding backfilling.

H. Street Patching and Restoration. See CMC [12.04.280](#)(O) and (P) for requirements regarding street patching and trench restoration. [Ord. 819B § 13, 2007; Ord. 785B § 14 (3A), 2005.]

## **12.04.350 Erosion control.**

A. General.

1. All projects requiring public works department approval, as defined by these standards, will include erosion control plans if any of the following conditions are met:
  - a. Proposed land disturbance activities that could cause sediment runoff beyond the project limits.
  - b. A clearing, filling or grading permit is required.
  - c. The proposed project could possibly impact a nearby stream, wetland, or body of water.
  - d. When deemed necessary by another permitting authority.
2. Site work will not commence until all erosion control measures have been set in place in accordance with the approved erosion control plans.
3. The contractor/applicant must ensure that all erosion control measures are properly maintained in accordance with standard industry procedures.
4. The general notes that follow will be included on any plans dealing with erosion control.

### **General Notes (Erosion Control)**

1. Erosion control measures will be in place prior to the beginning of construction. A representative from the city will inspect and approve the erosion control measures prior to the start of construction.
2. Erosion control measures are not limited to the items on this plan. The contractor is responsible for the installation and maintenance of all erosion measures, as required under the most recent version of the Chehalis storm water management plan. Care will be taken to prevent migration of silt and/or polluted runoff to off-site properties.
3. The contractor will make regular surveillance of all erosion control measures. In addition, erosion control will be thoroughly inspected after each rainfall event. The contractor will make all necessary repairs, modifications, and additions as necessary to ensure the proper operation of the erosion control measures. The city may require more frequent inspections of erosion control measures by the contractor should site or weather conditions dictate.
4. During the wet season, November through March, all disturbed soils will be stabilized within 48 hours after land disturbance activities have ceased. Erosion control measures will include, but are not limited to, installation of straw matting, jute matting, straw mulch and/or wood chips, and covering the affected area and spoil piles with plastic sheeting.
5. The contractor will check all seeded or sodded areas regularly to ensure that the vegetative cover is being adequately established. Areas will be repaired, reseeded, and fertilized as required.
6. Tracking of soil off site will not be allowed. If any soil is tracked beyond the limits of the site, it will be removed before the end of that working day. To prevent additional tracking, vehicle tires must be swept or washed prior to leaving the project site.

7. No more than 500 lineal feet (LF) of trench on a downslope of more than five percent will be opened at one time.
8. Excavated material will be placed on the uphill side of trenches.
9. Excavated material will not be placed in established drainage ditches under any circumstances.
10. Trench dewatering devices will be discharged in a manner that will not adversely affect flowing streams, drainage systems, or off-site properties. An established sediment trap will be used as the receiver for all trench dewatering operations.
11. All disturbed areas will be seeded or sodded upon completion of work. The contractor will be responsible to ensure that complete coverage of the disturbed areas is provided and that growth of vegetation is established. Seed and sod applications will be conducted in accordance with the timelines noted in the most recent edition of the WSDOT Standard Specifications.
12. All erosion control will remain in place until such time as the site is adequately stabilized. Prior to removal of erosion control measures, the engineering division will be notified for final inspection and approval.

**B. Best Management Practices. Erosion control may include the following:**

**1. Sedimentation Ponds.**

a. Sedimentation ponds are utilized to collect runoff generated on a construction site, thereby allowing sediment to be captured before the runoff leaves the site. Sedimentation pond design will include the following considerations:

i. Computation of the sediment storage volume;

ii. Computation of the settling volume;

iii. Computation of the pond surface area (surface area, in square feet = 1,250 x one-year, 24-hour storm rate, in cfs).

b. Minimum pond dimensions are as follows:

i. Two-foot depth for settling;

ii. Three-foot depth for sediment storage;

iii. Three-to-one ratio side slope.

c. The contractor will inspect sedimentation ponds immediately after each rain event to ensure the integrity of the facility. The contractor will also remove the majority of the sediment collected in the ponds whenever the storage volume is exceeded or the settling volume is infringed upon. In addition, prior to the final completion of the project, ponds will be cleaned out in their entirety.

d. The length/width ratio of the pond will be as large as possible. A 5:1 ratio is the preferred minimum, but exceptions may be granted when deemed appropriate by the public works department or designated consultant. The pond will be divided into a series of at least two separate chambers. Perforated pipe risers will be used to convey water between the chambers and at the outlet.

2. Interceptor Channels. Interceptor channels are used to capture runoff generated on a construction site before it can leave the project limits. The channel is often used in combination with a sedimentation pond. The channel is typically grass-

lined and runs along the perimeter of the site. The grass must be established prior to the start of construction. Therefore, sod is often used to establish the vegetated surface of the channel. Upon completion of the project, the sod can be removed and re-used if the ditch is filled in and restored with a suitable and stable cover material.

3. Sediment Barriers. Sediment barriers are filtering devices that are run along the perimeter of a site to capture sediment while allowing runoff water to continue along its natural path. Silt fencing and hay bales are common examples of sediment barriers.

Regular removal of sediment is required to ensure that the barriers function properly. In addition, the structural integrity of the barriers must be maintained at all times. Barriers will be installed, inspected and repaired in accordance with the details and requirements included in these standards.

4. Stabilized Construction Entrance. A stabilized construction entrance is a rocked access point to a construction site. The entrance reduces material carried from the site onto the public right-of-way.

Construction entrances must be cleared of mud and debris regularly to ensure that materials are not being tracked from the construction site onto the right-of-way and beyond. The contractor is responsible for all required maintenance of entrances.

5. Detention/Retention Facilities. No retention/detention facility will be located in an area that is used to satisfy an open space requirement unless it enhances a recreational amenity. Use of designated open space areas for storm water detention/retention and infiltration must satisfy all conditions of the city of Chehalis for usability, landscape conformity and ease of access. The city will make the final determination whether or not the proposed storm water facilities are compatible with and satisfy the intent of an open space.

The primary purpose of a consolidated open space is to provide usable area for recreation activities, buffer zones, and green belt areas, and must be designed for this intent. Any use of this area for storm water detention/retention must clearly be subordinate to and not detract from open space uses. The usable open space will be predominantly flat and in no case exceed 4:1 where drainage facilities are present. A minimum of 50 percent of the linear slope length will not exceed 7:1.

The public works department or designated consultant will review the use of commercial parking lots for storm water detention on a case-by-case basis. The detention area will be situated away from areas of pedestrian movement. The maximum depth of water in parking lot storage will be limited to 12 inches. [Ord. 819B § 13, 2007; Ord. 785B § 14 (3B), 2005.]

## **Article V. Water**

### **12.04.360 General.**

Any extension of the Chehalis water system must be approved by the department of public works and conform to the department of health, the city of Chehalis water system plan, and Chehalis police department and fire department requirements.

In designing and planning for any development, it is the developer's responsibility to determine that adequate water for both domestic use and fire protection is attainable. Proposed plans must show how water will be supplied and whether adequate water pressure and volume will be maintained in case of fire. An analysis of the system may be required if it appears that the system might be inadequate.

Anyone desiring to extend or connect to the city water system must contact the engineering division for a water/sewer/storm water application form. After the completed application is returned to the public works department, along with any other information that may be required or requested, staff will determine the costs to connect to city utilities. Extension of or connection to city water lines outside of the Chehalis urban growth area (UGA) is permitted only when a demonstrated public health risk exists and has been identified in writing by an appropriate health agency.

Prior to the issuance of a water meter for development projects, all public works improvements must be completed and approved, including granting of right-of-way or easements, submission and acceptance of as-built drawings, and all applicable fees must be paid.

Building permits for new construction of single-family subdivisions will not be issued without final approval of the public works director. For commercial projects, building permits may be issued upon completion and acceptance of the required fire protection facilities. A construction bond, in accordance with CMC [12.04.190](#), will be required for the remaining improvements. A certificate of occupancy will not be issued until final public works approval is given for all improvements. [Ord. 785B § 14 (4.01), 2005; Ord. 767B, 2004; Ord. 766B, 2004.]

#### **12.04.370 Design standards.**

The design of any water extension/connection will conform to these standards and all other applicable standards. The layout of extensions will provide for continuation and/or looping of the existing system. The public works department and/or the engineering division has the authority to apply or necessitate items not covered or mentioned in this article.

The general notes that follow must be included on all plans dealing with the city of Chehalis water system.

#### **General Notes (Water Main Installation)**

1. All workmanship and material will be in accordance with city of Chehalis standards and the most recent copy of the WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction, American Water Works Association (AWWA) Standards and ANSI/NSF Standard 60 or 61.
2. A preconstruction meeting will be held with the public works department and the engineering division prior to the start of construction.
3. All water mains will be ductile iron cement mortar lined thickness Class 52.
4. Gate valves will be resilient wedge, NRS (nonrising stem) with O-ring seals. Valve ends will be mechanical joint or ANSI flanges. Valves will conform to AWWA 509-80. Valves will be Mueller, M&H, Kennedy, Clow R/W or American Flow Control Series 2500. Existing valves and all valves installed directly to and connected to a portion of the active water system are to be operated by city employees only.
5. Fire hydrants will be Mueller Centurion A-423, M&H Reliant Style 129, Clow Medallion, or Kennedy Guardian K81D, Waterous Pacer Model WB-67-250 or AVK

2780. Hydrants will be installed in accordance with the most recent version of the International Fire Code. Hydrants will be bagged and the connecting gate valves left closed until the system has been approved. Hydrants must be painted with sunburst yellow high-grade enamel after installation.

6. All lines will be chlorinated and tested in conformance with the above-referenced specifications (see Note 1).

7. All pipes and services will be installed with continuous tracer tape placed 12 to 18 inches under the proposed finished subgrade. The marker will be of plastic, nonbiodegradable, metal core, or backing marked "WATER" that can be detected by a standard metal detector. Tape will be Terra Tape "D" or approved equal. In addition to tracer tape, toning wire will be installed over all pipe and services. Toning wire will be UL listed, type UF, 14-gauge solid coated copper wire, taped to the top of the pipe to prevent movement during backfilling and laid loose enough to prevent stretching and damage before being brought up and tied off at the valve operating nut or valve box. If the operating nut is not easily accessible from the ground surface, the copper wire will be tied off at the valve box in such a way that the wire is easily accessible from the ground surface. Two feet of slack will be provided to allow for connection to the locator.

A one-pound magnesium anode will be buried with the pipe every 1,000 linear feet maximum for cathodic protection of the toning wire. Toning wire splices and connections to anodes will join wires both mechanically and electrically and will employ epoxy resin or heat-shrink tape insulation. Toning wire will be tested prior to acceptance of the pipe system. A written notice from the contractor to the city must be received two business days prior to when testing is required.

8. The contractor will provide traffic control plan(s) as required in accordance with MUTCD.

9. All water mains will be staked for grades and alignment by an engineering or surveying firm capable of performing such work. Staking will be maintained throughout construction.

10. All service line and water valve locations will be marked on the face of the adjacent curb with a "W" or "WV" embossed one-fourth inch into the concrete.

11. All water system connections serving buildings or properties with domestic potable water, fire sprinkler or irrigation systems will comply with the minimum backflow prevention requirements established by the Department of Health (DOH) and the city of Chehalis cross-connection control program.

12. Call Utilities Underground Location Center at 1-800-424-5555 a minimum of two business days prior to any excavations.

13. The city will be notified five business days prior to scheduling a water system shutdown. The city's water division will perform all water system shutdowns. When connections require "field verification," connection points will be exposed by the contractor and fittings verified by the city two business days prior to the distribution of shutdown notices. Customers involved with or affected by water service

interruptions will be notified at least 48 hours in advance. Shutdowns will not be permitted on Fridays, weekends, or holidays without written authorization from the director of public works.

14. When connecting to an existing water line where a new valve is not to be installed, the existing valve must be pressure tested to these standards by the contractor prior to connection. If an existing valve fails to pass the test, the contractor will make the necessary additional provisions to test the new line prior to connecting to the existing system or will install a new valve. New lines will not be connected to the existing system until all required tests have been passed.

[Ord. 785B § 14 (4.02), 2005.]

#### **12.04.380 Water main.**

A. General. Water mains will be sized to provide adequate domestic water plus fire flows at the required residual pressure. Fire flow requirements will be determined by the Chehalis fire department. However, the quantity of water required will in no case be less than 1,000 gpm at 20 psi residual pressure in single-family and/or duplex residential areas, or less than 1,500 gpm at 20 psi residual pressure in multifamily residential areas, commercial areas and/or industrial areas.

The minimum water main size will be six inches in diameter where looped. Dead-end mains will be a minimum of eight inches in diameter. All mains that may be extended or looped must end with an approved flanged gate valve and blind flange. A straddle block will be installed at a point along the last length of pipe preceding the valve, in lieu of a thrust block at the end.

Larger-sized mains may be required in specific areas identified in the Chehalis water system plan. The city may also require the installation of larger mains if determined necessary to meet fire protection needs, domestic requirements and/or for future service needs (see CMC [12.04.130](#), Latecomers agreements).

B. Piping. All pipe for water mains will have flexible gasketed joints and will comply with the following specifications:

Ductile iron pipe will conform to AWWA C151 Class 52 and will have a cement mortar lining conforming to AWWA C104. All pipes will be joined using nonrestrained joints that will be rubber gaskets, push-on type or mechanical joint, conforming to AWWA C111.

C. Fittings. All fittings will be ductile iron compact fittings conforming to AWWA C153 or AWWA C110 or C111. All fittings will be cement mortar lined conforming to AWWA C104. Plain-end fittings will be ductile iron if mechanical joint retainer glands are installed on the plain ends. All fittings will be connected by flanges or mechanical joints. The city shall require the use of MEGALUG retainers for a water line installation, as necessary.

D. Pipe Installation. All pipe and services will be installed as directed in note 7 of the general notes in CMC [12.04.370](#).

E. Cover Required. The minimum cover for all water mains from top of pipe to finished grade will be 30 inches for ductile iron pipe unless otherwise approved.

F. Connection to Existing Water Mains. The developer's engineer will be responsible for determining the scope of work for connection to existing water mains. A minimum of five business days' advance notice to the water division is needed to schedule shutdowns. However, shutdowns cannot be scheduled until a water/sewer/storm water

application has been approved and all applicable fees have been paid in full. The city of Chehalis water division will be consulted regarding fittings or couplings required. It will be the contractor's responsibility to verify the location and depth of the existing main and the fittings required to make the connections to the existing main. All excavation, connections, piping, tapping valve fittings, services, anchors, blocking, bedding, backfill, compaction, restoration and other labor and materials required will be furnished and placed by the contractor. The tapping of an existing water main will be done in the presence of a water division representative. The water division will be given two business days' advance notice of a water main tap and they will perform all shutdowns on existing mains. [Ord. 785B § 14 (4.03), 2005; Ord. 767B, 2004.]

#### **12.04.390 Service interruption.**

The contractor will give the public works department a minimum of five business days' advance notice of any planned connection to an existing pipeline. This includes all cut-ins and live taps. Notice is required so disruptions to existing services can be scheduled and affected customers notified. The contractor will make every effort to schedule water main construction with minimum disruption of water service. The contractor is responsible for ensuring that the excavation and shoring procedures comply with L&I standards for worker safety. If these procedures are not followed, the connection will not be performed. [Ord. 785B § 14 (4.04), 2005.]

#### **12.04.400 Hydrants.**

A. The lead from the service main to the fire hydrant will be ductile iron cement mortar lined Class 52, no less than six inches in diameter. A gate valve will be installed a minimum of three feet from the hydrant, unless otherwise approved.

B. Fire hydrants will have two two-and-one-half-inch outlets with National Standard threads and one four-inch pumper port outlet with Pacific Coast threads (male threaded 4.72-inch diameter). The pumper port will be fitted with a five-inch quick connect Storz adapter with a Pacific Coast thread hydrant connection (female threaded four-and-three-fourths-inch diameter). The Storz adapter will include a cap. The hydrant valve opening will be five-and-one-fourth-inch diameter. The hydrant will have a positive and automatic barrel drain and will be of the "safety" or breakaway style.

Hydrants will be Mueller Centurion A-423, M&H Reliant Style 129, Clow Medallion or Kennedy Guardian K81D, Waterous Pacer Model WB-67-250 or AVK 2780. Alternate hydrant styles and manufacturers will be considered on a case-by-case basis and must be approved by the director of public works. All hydrants will be bagged and the connecting gate valves will remain closed until the system is tested and approved. Developments being served by existing hydrants will be required to upgrade to these standards and use the same type of hydrant throughout the development. Hydrants will be painted with sunburst yellow high-grade enamel after installation.

C. The department of public works and Chehalis fire department will work together to determine the required hydrant spacing for installation. All hydrants will be installed and placed in a manner that provides accessibility to the fire department and their equipment as determined by both departments.

Unless otherwise required by the public works department, the following guidelines will apply for hydrant number and location:

1. At least one hydrant will be installed at all intersections.



2. Hydrant spacing of 300 feet will be required in all areas except single-family and duplex residential areas.

3. Hydrant spacing of 500 feet will be required for single-family and duplex residential areas.

4. The spacing distance for hydrants will be measured along the frontage street(s) and/or accessible side street(s) only. When determining the sufficiency of existing hydrants related to hydrant placement and spacing, hydrants located behind or on parallel streets or alleys, or hydrants with flows less than the minimum fire flows listed in CMC [12.04.380\(A\)](#), will not be considered.

5. When any portion of a proposed building is in excess of 150 feet from a water supply on a public street or right-of-way, privately owned on-site hydrants will be required. Such hydrants will be located per the Chehalis fire department and the International Fire Code. The hydrants will be privately maintained and will include the appropriate metering and backflow prevention, as noted in these standards. A proposed maintenance schedule will be submitted to the city for review prior to final approval of the engineering plans.

D. Fire hydrants will be installed as detailed in Standard Drawing 4-8.

E. For requirements regarding use, size and location of a fire department connection (FDC) and/or post indicator valve, contact the fire department. Location of the FDC will be shown on all water plans.

F. When necessary, the public works department may require hydrants to be protected by two or more posts, four-inch diameter by five feet high, made of either reinforced concrete or steel.

G. Fire hydrants must be installed, tested, and accepted prior to the issuance of a certificate of occupancy. [Ord. 785B § 14 (4.05), 2005; Ord. 767B, 2004.]

#### **12.04.410 Valves.**

All valves and fittings will be ductile iron with ANSI flanges or mechanical joint ends. All existing valves are to be operated by city employees only.

Valves will be installed in the distribution system at sufficient intervals to facilitate system repair and maintenance, but in no case will there be less than one valve every 1,000 feet. Generally, there will be two valves on each tee and three valves on each cross. Specific requirements for valve spacing will be made at the plan review stage.

A. Gate valves will be used on all two- to 12-inch lines. The design, materials and workmanship of all gate valves will conform to the most recent revision of AWWA C509-87. Gate valves will be resilient wedge nonrising stem (NRS) with two internal O-ring stem seals. Gate valves will be Mueller, M&H, Kennedy, Clow R/W or Waterous Series 500.

B. Butterfly valves will be used on all lines 14 inches and larger. Butterfly valves will conform to AWWA C504-87, Class 150B, with cast iron short body and O-ring stem seals. Butterfly valves will be Mueller, Linseal III, Kennedy, Pratt Groundhog, or Allis Chalmers.

C. Valve Box. All valves will have a standard Olympic Foundry 910 or 940 water valve box as determined by the water division. If the city approves or requires the use of an Olympic 910 valve box, it will be set to grade with a six-inch ASTM 3034 SDR 35 PVC riser from valve to approximately six inches from the valve box top. If valves are not set in a paved area, a three-by-three-foot concrete pad four inches thick will be set around

each valve box at finished grade. An Olympic Foundry 940 valve box will be required for all locations of heavy traffic. In areas where the valve box is on the shoulder of the road, the ditch and shoulder will be graded before placing an asphalt or concrete pad. Valve box lids will be ductile iron, anti-kickout, and marked "WATER" (see Standard Drawing 4-12). All valve locations will be marked on the face of the adjacent curb with a "WV" embossed one-fourth inch into the concrete. [Ord. 785B § 14 (4.06), 2005.]

#### **12.04.420 Casing.**

Steel casing pipe will be schedule 20 steel or equal. Pipe spacers will have eight-inch runners. Casting pipe and spacers will be sized for pipe being installed with a minimum of three spacers per section of pipe. The casing pipe will then be sand-packed and sealed in accordance with the spacer manufacturer's recommendations. [Ord. 785B § 14 (4.07), 2005.]

#### **12.04.430 Air and vacuum release valve.**

Air and vacuum release valves (ARV) will be APCO combination air release valves. Installation will be as shown on Standard Drawing 4-9.

The installation will be set at the high point of the line when required. Where possible, pipes are to be graded to prevent the need for an air release valve. Air release valves may not be required when services are in the vicinity; however, the final determination will be made by the public works department. [Ord. 785B § 14 (4.08), 2005.]

#### **12.04.440 Blowoff assembly.**

If a fire hydrant is not located at the end of a dead-end main, a blowoff assembly will be required. On water mains that may be extended in the future, the valve that operates the blowoff assembly will be the same size as the main and provided with a saddle block along the last length of the pipe preceding the valve, in lieu of a thrust block at the end. The working pressure rating for blowoff assemblies will be a minimum of 200 psi. Installation will be as shown on Standard Drawing 4-10. [Ord. 785B § 14 (4.09), 2005.]

#### **12.04.450 Backflow prevention.**

All water system connections providing buildings or properties with domestic potable water, fire suppression or irrigation systems will comply with the backflow prevention requirements as established by the Department of Health (DOH), WAC and the city of Chehalis cross-connection control program.

Having an approved backflow assembly(s) installed is necessary to protect the city water system and all users from any possible contamination. All backflow assemblies installed will be of a type and model preapproved by the DOH or the city. No cross-connections will be created, installed, used, or maintained within the city of Chehalis water system. A list of approved testers may be obtained from the Washington Environmental Training Resource Center (WETRC) located in Auburn, Washington.

In-premises cross-connections must have an approved backflow assembly(s) in place in accordance with the Uniform Plumbing Code (UPC). The city may require additional in-premises and/or premises protection in accordance with the DOH and the city of Chehalis cross-connection control plan when health hazards are determined to exist.

All assemblies must be installed in accordance with the most recent versions of the city of Chehalis cross-connection control program, the DOH, UPC, and the

PNWS/AWWA Cross-Connection Control Manual. In addition, all assemblies must be inspected and approved by the city's cross-connection specialist (CCS). The CCS may also conduct an on-site inspection of new and/or existing backflow assemblies during testing. The city will release or issue a certificate of occupancy only after all backflow assemblies have passed a certified test.

Any person violating any provision of the city of Chehalis cross-connection control plan will be subject to penalties as stated under CMC [13.04.070](#)(G) and (H).

A. Backflow Assemblies. The definitions, abbreviations and acronyms relating to cross-connections frequently used in cross-connection control are found in the Washington State Department of Health Water System Design Manual as applies to "Group A" public water systems. Accepted backflow prevention assemblies are RPBA, RPDA, DCVA, DCDA, PVBA or SVBA of a make, model, and size that has been approved by the DOH. Assemblies on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research are also approved.

B. Installation Requirements. Backflow prevention assemblies used for premises isolation will be installed at the expense of the user, downstream from the city's water metering device, but within six feet of the meter box or before any other use connection, to protect the water distribution system from any potential hazard, as determined by the city. All assemblies must be installed in accordance with the most current versions of the city of Chehalis cross-connection control plan, DOH requirements, UPC, and the PNWS/AWWA Cross-Connection Control Manual.

In-premises installation of backflow assemblies can be installed only with written permission by the city's CCS or may be mandated along with premises isolation when high health hazards are determined to exist by the CCS. All backflow assemblies (premises or in-premises) must be readily accessible to city personnel during regular working hours of 8:00 a.m. to 4:30 p.m. If there is a change of ownership of an in-premises backflow assembly and/or at any time all requirements are not met, the city of Chehalis has the right to enforce premises isolation and will follow the procedures established in the city of Chehalis cross-connection control plan, Section 6 (a – f). The city of Chehalis must be notified within two business days of the completion of a backflow assembly installation. Upon notification, the city's CCS will then inspect the installation to determine compliance with all applicable requirements.

All backflow assembly installations are also required to be tested by a Washington State DOH-certified backflow assembly tester (BAT) with an annual certificate of accuracy for their testing equipment on file with the city. The test results must be sent to the city showing the backflow assembly having successfully passed the certified test. The property owner must schedule a backflow test annually.

C. Costs of Compliance. All costs associated with purchase, installation, inspections, testing, replacement, maintenance, parts and repairs of a backflow assembly are the responsibility of the property owner/user.

D. Termination of Services. Failure on the part of any customer to correct all cross-connections in accordance with these standards is sufficient cause for the immediate discontinuance of public water service to the premises. [Ord. 785B § 14 (4.10), 2005.]

#### **12.04.460 Service connection.**

A. All service connection sizes used for new development will be determined by industry standards and approved by the public works department or designated consultant and installed by the developer at the time of mainline construction. After the lines have been constructed, tested and approved, the owner may request a water meter. The city will install a water meter only after a water/sewer/storm application has been completed, all applicable fees paid and the system inspected and approved. With the placement of one-and-one-half-inch or two-inch meter setters (Standard Drawing No. 4-3), the contractor shall install the meter at the time the setter is put in place. The contractor shall contact the city two business days prior to the installation of the setter and coordinate the delivery of the meter with the installation of the setter. Meter and gasket will be supplied by the city. The city will lock off the setter after the contractor has installed the meter.

B. When water is desired for a parcel fronting an existing main but not served by an existing setter, a water/sewer/storm application must be completed and returned to the city. Upon approval of the application and payment of all applicable fees, the city will tap the main and install the meter, box, and setter.

C. Service lines will be Type K soft copper. All connections will be of Ford, McDonald or Mueller 110 compression connection fittings. Service lines will be installed a minimum of 22.5 degrees off the main. Tracer tape will be installed over all service lines.

Service saddles will be ductile iron with double stainless steel traps. All clamps will have rubber gasket and iron pipe threaded inlet, and iron pipe threaded or approved compression outlet connections.

Corporation stops will be all U.S. brass and will be Ford, Mueller, or A.Y. McDonald with iron pipe (IP) threads with tapping saddles and CC threads on direct taps conforming to AWWA C800.

D. Master meters will not be allowed for service to more than one building. An approved backflow prevention system must be installed in conjunction with any master meter, in accordance with the requirements outlined in this article. [Ord. 819B § 13, 2007; Ord. 785B § 14 (4.11), 2005.]

#### **12.04.470 Marking service lines.**

The location of all service lines will be marked on the face or top of the cement concrete curb with a "W" embossed one-fourth inch into the concrete. [Ord. 785B § 14 (4.12), 2005.]

#### **12.04.480 Water main/sanitary sewer crossings.**

The contractor will maintain a minimum of 18 inches of vertical separation between sanitary sewers and water mains – with the water mains being at the higher elevation. If the minimum vertical separation cannot be met, the standards for water/sewer separation from the DOE Guidelines as shown in this section will apply.

The longest standard length of water pipe will be installed so that the joints will fall equidistant from any sewer crossing. In cases where minimum separation cannot be maintained, it may be necessary to utilize water main-rated pipe for the sewer line, or to encase the water pipe and/or sewer line in pipe or concrete. No concrete will be installed unless specifically directed by the public works department or designated consultant.

Water/Sewer Separation Detail Department of Ecology Guidelines

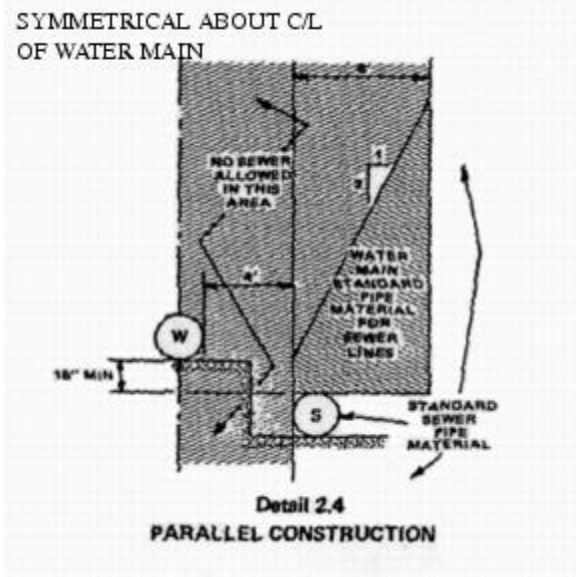


Figure 1

**Table 1. Water Main Standard Pipe Material**

Type of Pipe	AWWA (ASTM) Standard		
	Pipe	Joint	Fittings
Ductile Iron	C151 and C104	C111	C110
Asbestos-Cement	C400 (Type II) Class 200	(D1869)	C110
Polyvinyl-Chloride	C900	(D3139 and F477)	C110
Concrete Cylinder			C303

[Ord. 819B § 13, 2007; Ord. 785B § 14 (4.13), 2005.]

**12.04.490 Irrigation.**

All irrigation systems will be installed with a backflow prevention assembly approved by the Department of Health or the city of Chehalis. Irrigation sprinklers will be situated so as to not wet any public street or sidewalk. [Ord. 785B § 14 (4.14), 2005.]

**12.04.500 Staking.**

All surveying and staking will be performed by an engineering or surveying firm licensed by the state of Washington and capable of performing such work. A preconstruction meeting will be held with the city prior to commencing staking and all staking will be inspected by the city prior to construction and maintained throughout construction.

The minimum staking of water lines will be as follows:

A. Stake centerline alignment every 25 feet (50 feet in tangent sections), with cuts and/or fills to bottom of trench maintaining the minimum required depth of cover over

pipe. Centerline cuts are not required when road grade is to finished subgrade elevation.

B. Stake location of all fire hydrants, hydrant flange elevations, tees, water meters, setters and other fixtures with cut or fill to finished grade. [Ord. 785B § 14 (4.15), 2005.]

#### **12.04.510 Trench excavation.**

A. Clearing and grubbing, when required, will be performed within the easement or public right-of-way as permitted by the city and/or governing agencies. All debris resulting from clearing and grubbing must be disposed of by the owner or contractor in accordance with the terms of the applicable permits.

B. Trenches will be excavated to the line and depth designated by the city to provide a minimum of 30 inches of cover over the pipe and, to the extent practical, a maximum of 42 inches of cover over the pipe. Except for unusual circumstances where approved by the city, the trench sides will be excavated vertically and the trench width will be excavated only to such widths as are necessary for adequate working space as allowed by the governing agency. The trench will be kept free from water until pipe assembly is complete. Surface water will be diverted so as not to enter the trench. The owner will maintain sufficient pumping equipment on the job to ensure that these provisions are carried out.

C. The contractor will perform excavation of every description and of whatever substance encountered including boulders, rocks, roots and other obstructions. All material will be entirely removed or cut out to the width of the trench and to a depth six inches below water main grade. Where materials are removed from below water main grade, the trench will be backfilled to grade with thoroughly compacted material that is satisfactory to the city.

Pipe placed in the trench will be sealed with a watertight plug at the end of each day. More frequent use of a watertight plug may be required at the discretion of the city.

D. Trenching and shoring operations will not proceed more than 100 feet in advance of pipe laying without approval of the city, and will be in conformance with the Washington Industrial Safety and Health Administration (WISHA) and Office of Safety and Health Administration (OSHA) Safety Standards. The contractor will also maintain the presence of a "competent person" as defined by the Washington State Department of Labor and Industries when any trench excavation and backfill work is being done at the project site.

E. The bottom of the trench will be finished to grade with hand tools in such a manner that the pipe will have bearing along the entire length of the barrel. The bell holes will be excavated with hand tools to sufficient size to make up the joint. [Ord. 785B § 14 (4.16), 2005.]

#### **12.04.520 Thrust blocking.**

Location of thrust blocking will be shown on plans. Thrust block concrete will be Class B poured against undisturbed earth. A plastic barrier will be placed between all thrust blocks and fittings. The city shall require the use of MEGALUG restrainers, Romac retainers or restraining rods in lieu of and/or in conjunction with thrust blocking. See Standard Drawings 4-13 and 4-14 for thrust block locations and calculations. [Ord. 785B § 14 (4.17), 2005.]

**12.04.530 Backfilling.**

Backfilling will not commence until the pipe installation has been inspected and approved by a city inspector. Backfilling and surface restoration will closely follow installation of pipe so that not more than 100 feet is left exposed during construction hours without approval of the city.

Selected bedding material conforming to WSDOT/APWA Standard Specifications will be placed and compacted around and under the water mains by hand tools to a height of six inches above the top of the water main. The remaining backfill will be compacted to 95 percent of the maximum density in traveled areas, 90 percent outside traveled areas. The city will have the discretion of requiring the use of control density fill (CDF) for backfill material for road crossings.

Where governmental agencies other than the city have jurisdictions over roadways, the backfill and compaction will be done to the satisfaction of the agency having jurisdiction, but in no case will the backfilling or compaction be to a lower standard than that of the city. If suitable backfill material, as determined by the city, is not available from trenching operations, the city may require the placement of bedding and/or a gravel base conforming to the current WSDOT/APWA Standard Specifications. [Ord. 785B § 14 (4.18), 2005.]

**12.04.540 Street patching and restoration.**

See CMC [12.04.280](#)(O) and (P) for requirements regarding street patching and trench restoration. [Ord. 785B § 14 (4.19), 2005.]

**12.04.550 Hydrostatic tests.**

Prior to the acceptance of work, installation will be subject to a hydrostatic pressure test by the contractor. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test will be furnished and operated by the contractor. Tests will be conducted only after all connections along the section to be tested have been made and the roadway section is constructed to subgrade.

The section of water main being tested will be filled with water and allowed to stand under pressure for a sufficient length of time to allow air to escape and the pipe lining to absorb water. The contractor will be responsible for all costs, labor and materials associated with the testing of the line. The contractor will pay for all water needed for testing at the current rate charged by the city.

The test will be accomplished by pumping the main up to a pressure 150 psi above normal operating pressures but in no case will the test pressure be less than 200 psi. After reaching the test pressure, the pump will be stopped for 15 minutes and then the pressure brought back up to the test pressure again. The quantity of water used to restore the pressure will be accurately determined by pumping through a positive displacement water meter. The meter will be approved by the public works department prior to testing.

Acceptability of the test will be determined by using the following formula:

$$L = \frac{N \times D \times (P^{1/2})}{7400}$$



L = allowable leakage, gallons per hour (gph)

N = number of joints in the length of pipeline tested

D = nominal diameter of pipe, inches

P = average test pressure during the leakage test, psi

If the water used to restore the pressure in the system is greater than the allowable leakage determined by the formula, the main will be considered to have failed. There will not be any appreciable or abrupt loss in pressure during the 15-minute test period. Any significant loss will also be grounds for a nonpassing test. Should the tested section fail to pass the pressure test as specified, the contractor will, at no expense to the city, locate and repair the defects and then retest the pipeline. All tests will be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. After the test has been completed, each gate valve will be tested individually by closing each in turn and relieving the pressure beyond. This test will be acceptable if there is no immediate loss of pressure on the gauge when the pressure comes against the valve being checked. The contractor will verify that the pressure across the valve does not exceed the rated working pressure of the valve.

Sections to be tested will normally be limited to 1,500 feet. The public works department or designated consultant may require that the first section of the pipe installed by the contractor, not less than 1,000 feet in length, be tested in order to qualify the crew and the material. Pipe installation will not be continued for more than an additional 1,000 feet until the first section has been successfully tested.

Prior to calling a city inspector to witness the pressure test, the contractor will have all equipment ready for operation and have successfully performed the test to ensure that the pipe is in satisfactory condition.

Defective material or workmanship discovered during a hydrostatic field test will be replaced by the contractor at no expense to the city. Whenever it is necessary to replace defective material or correct workmanship, the hydrostatic test will be rerun at the contractor's expense until a satisfactory test is obtained. Test pressure will be maintained while the installation is inspected by the city. See CMC [12.04.450](#) for testing responsibilities related to backflow prevention devices. [Ord. 819B § 13, 2007; Ord. 785B § 14 (4.20), 2005.]

#### **12.04.560 Sterilization and flushing.**

Sterilization of water mains will be accomplished by the contractor in accordance with the requirements of the Washington State Department of Health, AWWA Standards and in a manner approved by the city. At no time will chlorinated water from a new main be flushed into a body of water, including lakes, rivers, streams, drainage ways, and all waters where fish or other natural water life can be expected. Any discharge into a city sewer system must be approved in advance and in writing by the wastewater superintendent.

When the proper chlorine concentration has been established throughout the line, the valves will be closed and the line left undisturbed for 24 hours. The line will then be thoroughly flushed and water samples taken by the city at least 24 hours after flushing and disinfecting. Sampling collection should be scheduled with the engineering division at least two business days in advance. Should the initial chlorine treatment result in an unsatisfactory bacteriological test, the procedure must be repeated until satisfactory



results are obtained. The contractor will be responsible for all costs if retesting becomes necessary. Samples can only be taken on Mondays and Tuesdays. Testing and sampling will take place after all underground utilities are installed and compaction of the backfill within the roadway section is complete. [Ord. 785B § 14 (4.21), 2005.]

## **Article VI. Sanitary Sewer**

### **12.04.570 General considerations.**

A. General. "Sanitary sewerage" refers to wastewater derived from domestic, commercial and industrial pretreated waste to which storm, surface, and ground water are not intentionally admitted. Pretreatment will follow all the requirements as set forth by city ordinances and public works departmental policies.

Any extension of the city of Chehalis sanitary sewer system must be approved by the public works department and must be consistent with the city of Chehalis comprehensive sewer plan, city of Chehalis general sewer plan, Department of Ecology, and Department of Health requirements.

Within the corporate city limits, where public sewer is available it must be used. Connection is not required; provided, that the sewage from the structure originates more than 200 feet from the public sewer, except in the case of private residential or commercial developments where the developed property abuts a right-of-way in which a public sewer is located or where a service connection is otherwise provided. In this case, connection of all structures generating sewage will be required to connect to the public sewer regardless of distance.

Anyone who wishes to extend or connect to the city sewer system will contact the engineering division for a water/sewer/storm application. If a sewer line extension is being requested, a written request that specifically lists and details the line extension must be submitted to the engineering division. After the water/sewer/storm application is returned to the engineering division along with a written request and/or any other information as may be required or requested, city staff will determine costs or estimated costs and/or address council and other approvals as may be required.

See CMC [12.04.060](#) for definitions of specific sewers. Maintenance of the building sewer will be the responsibility of the property owner, while the remaining sewer lateral will be the city's responsibility.

B. Marking Side Sewers. The location of all side sewers will be marked on the face or top of the cement concrete curb with an "S" embossed one-fourth inch into concrete.

C. Sanitary Sewer/Water Main Crossings. See CMC [12.04.480](#) for requirements regarding sewer and water separation.

#### **D. Staking.**

1. All surveying and staking will be performed by an engineering or surveying firm licensed by the state of Washington and possessing the appropriate business license(s) to perform such work.

2. A preconstruction meeting will be held with the public works department and the engineering division prior to commencing staking. All construction staking will be inspected by the city prior to construction. Staking will be maintained throughout construction.

3. The minimum staking of sewer lines will be as follows:

a. Centerline alignment must be staked with cuts and/or fills to flow at 25 feet and 50 feet from each manhole or structure and every 50 feet thereafter, unless more frequent staking is required for construction at the discretion of a city representative.

b. Manholes must be staked with hubs to include invert elevations of all pipes and top of rim elevations to finished grade.

c. Location of valves, fixtures and septic tank will be staked for force mains and STEP systems.

E. Trench Excavation. See CMC [12.04.510](#) for requirements regarding trench excavation.

F. Backfilling. See CMC [12.04.530](#) for requirements regarding backfilling.

G. Street Patching and Restoration. See CMC [12.04.280](#)(O) and (P) for requirements regarding street patching and trench restoration.

H. Testing. Prior to acceptance and approval of construction, the following tests will apply to each type of construction:

1. Gravity Sewer.

a. After the pipes have been cleaned, and prior to acceptance of the project, the gravity sewer line will be subject to a low pressure air test per WSDOT/APWA standards. The contractor will furnish all equipment and personnel for conducting the test under the observation of a city inspector. The testing equipment will be subject to approval of the public works department or designated consultant.

Prior to calling a city inspector to witness the test, the contractor will have all equipment ready and have successfully performed the test. The air test for acceptance will be made after the trench is backfilled and compacted and the roadway section is completed to subgrade.

All wyes, tees, and ends of side sewer stubs will be plugged with flexible joint caps, or acceptable alternates, securely fastened to withstand the internal test pressures. Such plugs or caps will be readily removable and their removal will provide an opening suitable for a lateral connection or extension that conforms to these standards.

b. Testing of the sewer main will include a television inspection by the contractor, conducted under the direct supervision of an engineering inspector. Sewer laterals that cannot be otherwise checked for grade may be required to be televised using the same procedures as a sewer main, as determined by the public works director. Failure to have a city representative present will invalidate the test and the test will be repeated at the contractor's expense. Television inspections will be done after the air test has passed, the manhole has been channeled and before the roadway is paved. Immediately prior to the television inspection, enough water will be run down the line to come out the lower manhole. A sediment trap will be installed in the downstream manhole prior to flushing the line. The sediment trap and all the material it collects will be removed before the line is placed into service. A copy of the video and a written report will be submitted to the engineering division. Acceptance of the line will be made after the tape has been reviewed and approved by a city inspector. Any connection to an existing system will need to be televised as well.

The city may televise the new sewer line during periods of high ground water within the first year after acceptance of the line. Any conditions resulting in inflow and

infiltration (I&I) will be considered a system failure that will be repaired by and at the expense of the contractor.

c. A vacuum test of all manholes is required prior to acceptance. The structure will be tested in accordance with ASTM C1244-93. This test method covers procedures for testing cast-in-place or pre-cast concrete manhole sections, using the vacuum test method to demonstrate the integrity of the installed materials and construction procedures. Testing will be in the following manner:

i. All lift holes and pipes entering into the manhole will be plugged, taking care to securely brace each plug from being drawn into the structure.

ii. The test head will be placed at the top portion of the structure in accordance with the manufacturer's recommendations.

iii. A vacuum of 10 inches of mercury will be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. With the valves closed, the time will be measured for the vacuum to drop by one to nine inches. The manhole will pass the vacuum test if the time is greater than the time shown in Table 1 below.

**Table 1. Minimum Test Times for Various Manhole Diameters**

Depth in Feet	Diameter in Inches								
	30	33	38	42	48	54	60	66	72
8	20	20	20	20	20	23	26	29	33
10	20	20	20	21	25	29	33	36	41
12	20	20	21	25	30	35	39	43	49
14	20	21	25	30	35	41	48	51	57
16	22	24	29	34	40	46	52	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	53	65	72	81
22	31	33	39	46	55	64	72	79	89
24	33	36	42	51	59	64	78	87	97
26	36	39	46	55	64	75	85	94	105
28	39	42	49	59	69	81	91	101	113
30	42	45	53	63	74	87	98	108	121

Table 1 gives allowable time in seconds, i.e., test section is acceptable if vacuum does not drop below nine inches until after the times shown have expired.

iv. If the manhole fails the initial test, necessary repairs will be made by an approved method. The structure will then be retested until a satisfactory test is obtained.

v. If the manhole joint is displaced during the vacuum test, the manhole will be disassembled, the seal replaced, the structure reassembled, and retested until compliance is obtained.

vi. Testing can be done either before or after backfill operations around the structure; however, if during backfill operations it is found that the structure has been disturbed and it is suspected that the integrity of the joint has been compromised, retesting will be required.

vii. All other requirements stipulated in Section 7-05 of the most recent edition of the Washington State Department of Transportation Standard Specifications for Road, Bridge, and Municipal Construction, that has been adopted by the city, will also be adhered to for final acceptance of the manhole structure.

d. A mandrel test in accordance with Section 7-17.3(4)H of the WSDOT/APWA Standard Specifications will be performed by and at the expense of the contractor on all sewers except laterals (as defined in Article II of this chapter) when televising reveals a possible defect or belly in the pipe.

e. Any time that testing reveals problems that lead to repairs by the contractor, the city may require a complete retesting of the entire system. The retest will be required to ensure that the integrity of the system was not compromised during the repair work.

## 2. Force Main.

a. Prior to roadway paving and final acceptance of the project, the pressure and service lines will be subjected to a hydrostatic pressure test of 100 pounds per square inch for 15 minutes and any leaks or imperfections which develop under said pressure will be remedied by the contractor. No air will be allowed in the line. The main will be tested between valves. Insofar as possible, no hydrostatic pressure will be placed against the opposite side of the valve being tested. The pressure test will be maintained while the entire installation is inspected.

The contractor will provide all necessary equipment and will perform all work connected with the tests. Tests will be made after all connections have been made. This is to include any and all connections as shown on the plan. The contractor will perform all tests to assure that the equipment to be used for the test is adequate and in good operating condition and the air in the line has been released before requesting a city inspector to witness the test.

b. A water test for all wet wells in accordance with the manhole water test for gravity sewers will be required.

c. A mandrel test in accordance with Section 7-17.3(4)H of the Standard Specifications may be required, at the discretion of the public works department or designated consultant.

d. The contractor must provide verification of operating parameters such as pump operation, alarms, and electrical inspections. Inspections are to be conducted in the presence of a city inspector. The final verification will be documented in a written report that will be submitted to the city for review and approval prior to acceptance of all lift stations.

## 3. STEP System.

a. Prior to final acceptance of the project, the pressure mainline and service lines will be subject to a hydrostatic pressure test of 200 pounds for 15 minutes and all

leaks or imperfections that develop will be remedied by the contractor. No air will be allowed in the line. The main will be tested between valves. Insofar as possible, no hydrostatic pressure will be placed against the opposite side of the valve being tested. The pressure test will be maintained while the entire installation is inspected.

The contractor will provide all necessary equipment and will perform all work connected with the tests. Tests will be made after all connections have been made. The contractor will perform all tests to assure that the equipment to be used for the test is adequate and in good operating condition and the air in the line has been released prior to requesting a city inspector to witness the test.

b. A water test of the STEP tank at the factory and on site after installation is required in accordance with the criteria outlined in CMC [12.04.610\(G\)](#). The contractor will perform the test and supply all necessary equipment and materials. The testing will be conducted in the presence of a city inspector. Tests commence by 3:00 p.m. to ensure adequate time for testing to be conducted during the standard workday.

c. The contractor must provide verification of operating parameters such as pump operation, alarms, and electrical inspections. Inspections shall be conducted in the presence of a city inspector. The final verification will be documented in a written report that will be submitted to the city for review and approval prior to acceptance of all STEP systems.

I. Design Standards. The general notes that follow will be included on all plans dealing with sewage system design. In addition, the specific notes with gravity sewer and STEP systems will be included when these utilities are part of the project.

### **General Notes (Sanitary Sewer Main Installation)**

1. All workmanship and materials will be in accordance with city of Chehalis standards and the most recent copy of the State of Washington Standard Specifications for Road, Bridge and Municipal Construction (WSDOT/APWA).
2. City of Chehalis datum will be used for all vertical control. A list of benchmarks is available at the public works department.
3. All approvals and permits required by the city of Chehalis will be obtained by the contractor prior to the start of construction.
4. If construction is to take place in the county right-of-way, the contractor will notify the county and obtain all the required approvals and permits.
5. A preconstruction meeting will be held with the public works department and the engineering division prior to the start of construction.
6. The engineering division will be notified a minimum of two business days in advance of a tap connection to an existing main. A city inspector will be present at the time of the tap.
7. The contractor will be fully responsible for the location and protection of all existing utilities. The contractor will verify all utility locations prior to construction by calling the Utilities Underground Location Center at 1-800-424-5555 a minimum of two business days prior to any excavation.

8. All sewer mains will be field staked for grades and alignment by a licensed engineering or surveying firm qualified to perform such work. Staking will be maintained throughout construction.

9. All pipe and services will be installed with continuous tracer tape placed 12 to 18 inches under the proposed finished subgrade. The marker will be of plastic, nonbiodegradable, metal core or backing marked "SEWER" that can be detected by a standard metal detector. If visibility cannot be maintained between structures along the straight alignment of a sewer, toning wire will be installed above the sewer line at a depth no greater than 48 inches. Tape will be Terra Tape "D" or an approved equal. In addition, STEP mains, force mains, and curvilinear sewers will be installed with toning wire taped to the top of the pipe to prevent movement during backfill.

If toning wire is required, it will be UL listed, Type UF, 14-gauge copper. The wire will be laid loosely enough to prevent stretching and damage. The wire will be wrapped to a manhole or cleanout rings on gravity sewer or valve body on STEP mains.

A one-pound magnesium anode will be buried with the pipe every 1,000 linear feet maximum for cathodic protection of the wire. Toning wire splices and connections to anodes will join wires both mechanically and electrically and will employ epoxy resin or heat-shrink tape insulation. Toning wire will be tested prior to acceptance of the pipe system. A written notice from the contractor to the city two business days prior to testing is required. On a curvilinear sewer, the wire will be brought up, bared and wrapped three times around the manhole ring. The tape and wire will be furnished and installed by the contractor.

10. Bedding of the sewer main and compaction of the backfill material will be required in accordance with the above specification (see General Note 1).

11. All manholes and cleanouts outside the paved area will be installed in accordance with Standard Drawings 5-3 and 5-5.

12. When temporary street patching is allowed by the city, cold mix asphalt will be placed to a maximum depth of one inch. The contractor will be responsible for maintenance as required by the city.

13. Erosion control measures conforming to the most recent version of the city of Chehalis storm water management plan and Article IV of this chapter will be taken by the contractor during construction to prevent infiltration of existing and proposed storm drainage facilities and roadways.

14. Provide traffic control plan(s) in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) as required.

15. It will be the responsibility of the contractor to have a copy of the approved construction plans on site at all times. Approved plans are typically signified by the signature of the director of public works or designated consultant.

16. Any changes to the design will first be reviewed and approved by the developer's project engineer and the director of public works or designated consultant prior to implementation.

17. Prior to backfill, all mains and appurtenances will be inspected and approved by a city inspector. Approval does constitute final acceptance of the sewer line. The contractor will retain responsibility to repair all deficiencies and failures revealed during all required testing for acceptance and throughout the duration of the warranty. It is the contractor's responsibility to notify the engineering division in advance of all required inspections. Any main or appurtenance backfilled prior to inspection will be re-excavated for inspection at no cost to the city.

## **GRAVITY SEWER**

1. Gravity sewer mains will meet the following: PVC pipe will conform to ASTM P3034 SDR 35, ASTM F794, or ASTM F679 Type 1 with joints and gaskets conforming to ASTM 3212 and ASTM F477.

2. Pre-cast manholes will meet the requirements of ASTM C478. Manholes will be Type 1-48" as specified on the plans. Joints will be rubber gasket conforming to ASTM C443 and will be grouted from the inside. Lift holes will be grouted from the outside and inside of the manhole (see General Note 1).

3. Side sewer services will be PVC, ASTM D3034 SDR 35 with flexible gasket joints. Side sewer connections will be made by a saddle tap to an existing main (see Standard Drawing 5-12), or a sanitary tee from a new main connected above the springline of the pipe. Side sewer services will be installed according to applicable Standard Detail(s).

4. All side sewer locations will be marked on the face of the curb with an "S" embossed one-fourth inch into the concrete.

5. All lines will be high velocity cleaned, televised, and subjected to a low pressure air test per current WSDOT/APWA Specifications after backfilling, but prior to paving (see General Note 1). Hydrant flushing of lines is not an acceptable cleaning method. Testing of the sanitary sewer main will include television inspecting of the main by and at the expense of the contractor in the presence of a city inspector. Immediately prior to television inspecting, enough water will be run down the line to come out the lower manhole and the line is flushed clean. A copy of the video will be submitted to the engineering division. Acceptance of the line will be made after the tape has been reviewed and approved by the inspector. A test of all manholes in accordance with these standards is also required. Testing will take place after all underground utilities are installed and compaction of the roadway subgrade is completed.

## **STEP SYSTEMS**

1. All buried power for STEP systems will be installed according to all current and applicable electrical codes.

2. All buried power for STEP systems will be installed with continuous tracer tape installed 12 inches above the buried power. The marker will be plastic, nonbiodegradable metal core backing marked "POWER." Tape to be furnished by the contractor.

3. All STEP mains will be hydrostatically tested at 100 PSIG for 15 minutes according to the methods for hydrostatic testing of water lines in the most recent version of the WSDOT/APWA Specifications. All materials and labor are to be provided by the contractor. In addition, all STEP mains will be pigged in the presence of a city inspector, prior to placing the STEP main in service.

[Ord. 819B §§ 13, 16, 2007; Ord. 785B § 14 (5A), 2005.]

**12.04.580 Gravity sewer.**

A. General. All sewers will be designed as a gravity sewer whenever physically and/or economically feasible or as outlined in the city of Chehalis general sewer plan.

B. Design Standards. The design of any sewer extension/connection will conform to these standards, the Department of Ecology's "Criteria of Sewage Works Design," and any applicable standards as set forth herein.

The layout of extensions will provide for the future continuation of the existing system as determined by the city. See CMC [12.04.210](#) for utility extension information.

New gravity sewer systems will be designed on the basis of an average daily per capita flow of sewage of not less than 100 gallons per day. See the following DOE table on design basis for sewage. This figure is assumed to cover normal infiltration, but an additional allowance will be made where conditions are unfavorable. Generally, laterals and submain sewers should be designed to carry, when running full, not less than 400 gallons daily per capita contributions of sewage. When deviations from the foregoing per capita rates are used, a description of the procedure used for sewer design will be submitted to the engineering division and the public works department for review and approval.

**Criteria for Sewage Works Design Washington State Department of Ecology**

Discharge Facility	Design Units	Flow* (gpd)	BOD (lb./day)	SS (lb./day)	Flow Duration (hr.)
Dwellings	per person	100	0.2	0.2	24
Schools w/ showers and cafeteria	per person	16	0.04	0.04	8
Schools w/o showers and w/cafeteria	per person	10	0.025	0.025	8
Boarding schools	per person	75	0.2	0.2	16
Motels at 65 gal./person (rooms only)	per room	130	0.26	0.26	24
Trailer courts at 3	per trailer	300	0.6	0.6	24



persons/trailer					
Restaurants	per seat	50	0.2	0.2	16
Interstates or through highway restaurants	per seat	180	0.7	0.7	16
Interstate rest areas	per person	5	0.01	0.01	24
Service stations	per vehicle serviced	10	0.01	0.01	16
Factories	per person per 8-hour shift	15 – 35	0.03 – 0.07	0.03 – 0.07	Operating Period
Shopping centers	per 1,000 sq. ft. of ultimate floor space	200 – 300	0.01	0.01	12
Hospitals	per bed	300	0.6	0.6	24
Nursing homes	per bed	200	0.3	0.3	24
Homes for the aged	per bed	100	0.2	0.2	24
Doctor's office in medical center	per 1,000 sq. ft.	500	0.1	0.1	12
Laundromats, 9 – 12 machines	per machine	500	0.3	0.3	16
Community colleges	per student and faculty	15	0.03	0.03	12
Swimming pools	per swimmer	10	0.001	0.001	12
Theaters, drive-in type	per car	5	0.01	0.01	4
Theaters, auditorium type	per seat	5	0.01	0.01	12
Picnic areas	per person	5	0.01	0.01	12
Resort camps, day and night, with limited plumbing	per campsite	50	0.05	0.05	24
Luxury camps with flush toilets	per campsite	100	0.1	0.1	24

\*Includes normal infiltration

### C. Main Line – Gravity.

1. Sewer mains will be sized for the ultimate development of the tributary area. Nothing will preclude the city from requiring the installation of a larger-sized main if the city determines a larger size is needed to meet the requirements for future service.

The minimum size for mains will be eight-inch inside diameter. The minimum size for a lateral will be four inches.

2. Sewer mains will be constructed using materials conforming to the following:

a. PVC pipe six to 15 inches diameter must meet either ASTM D3034 SDR 35 solid wall pipe, or ASTM F794 for solid seamless profile pipe; or

b. PVC pipe 18 to 27 inches diameter will conform to ASTM F679 Type 1 only.

c. All joints for the PVC pipe will conform to ASTM D3212 with rubber gaskets conforming to ASTM F477.

3. Gravity sewer will maintain a minimum depth of five feet, unless otherwise approved, to provide gravity service to adjoining parcels and future areas to be served, adequate headroom within manholes for maintenance personnel and vertical clearance between water and sewer lines. Actual depth will be determined by slope, flow, velocity and elevation of existing system.

4. All sewer lateral connections to the main will be made with a sanitary tee connection. A cleanout will be provided at the edge of the right-of-way as shown in Standard Drawing 5-10. The direct connection of sewer laterals to interceptors is strictly prohibited. All new mains connecting to existing mains will require the installation of a new manhole if not made at an existing manhole. The city may require wyes at the upper extremity of a sewer line.

5. Slope. All sewers will be designed and constructed to give mean velocities, when flowing full, of not less than two feet per second based on Manning's Formula using an "n" value of 0.013. Use of other practical "n" values may be permitted by the public works department or designated consultant, if deemed justifiable on the basis of research or field data submitted. The following are minimum slopes; however, slopes greater than these are desirable:

<b>Sewer Size (Inches)</b>	<b>Minimum % Slope (Feet per 100')</b>
8	0.40 (0.0040 Ft./Ft.)
10	0.28 (0.0028 Ft./Ft.)
12	0.22 (0.0022 Ft./Ft.)
14	0.17 (0.0017 Ft./Ft.)
15	0.15 (0.0015 Ft./Ft.)
16	0.14 (0.0014 Ft./Ft.)
18	0.12 (0.0012 Ft./Ft.)
21	0.10 (0.0010 Ft./Ft.)
24	0.08 (0.0008 Ft./Ft.)
27	0.07 (0.0007 Ft./Ft.)
30	0.06 (0.0006 Ft./Ft.)
36	0.05 (0.0005 Ft./Ft.)

Under special conditions, slopes slightly less than is required for the two feet per second velocity may be permitted by the director of public works. Such decreased slopes will only be considered where the depth of flow will be 30 percent of the diameter or greater for design average flow. Whenever such decreased slopes are proposed, the design engineer will furnish the city with the plans and computations of the depths of flow at minimum, average, and daily or hourly rates of flow. Larger pipe will not be allowed to achieve lesser slopes. Sewers will be laid with uniform slope between manholes.

6. Gravity sewers will be designed with a straight alignment between manholes.

#### D. Connection to Existing System.

1. At connection to the existing system, all new sewer connections will be physically plugged until all tests have been completed and the city approves the removal of the plug.

2. Connection of new pipelines to existing manholes will be accomplished by using core-drilled holes. The transition of connecting channels will be constructed so as not to interrupt existing flow patterns. All connections will utilize Kor-N-Seal fittings. Manholes that contain knockouts will not be permitted for use as part of the city sewer collection system.

3. Connection of a pipeline to a system without an existing manhole will be accomplished by pouring a concrete base and setting manhole sections. The existing pipe will not be cut into until approval is received from the city.

4. Connections to manholes requiring a drop will follow the criteria as outlined in this section.

5. Connections where an existing stub-out is not available or where a new building sewer is the same size as the existing main will be accomplished by the installation of a new manhole.

6. Taps will be done by use of a core drill and will not be allowed to protrude into the existing main. A city inspector will be notified two business days prior to any tap of a city sewer and will be present to witness the tap. The inspector will collect all tapping cores from the contractor, or will be informed if the cores were washed into the sewer.

#### E. Manholes.

1. Pre-cast manholes will meet the requirements of ASTM C478 with either a pre-cast base or a cast-in-place base made from 3,000 psi structural concrete. Pre-cast bases must be pre-channeled by the manufacturer. Manholes will be Type 1, 48-inch diameter minimum. The minimum clear opening in the manhole frame will be 24 inches. Joints will be rubber gasket conforming to ASTM C443 and will be grouted from the inside. Lift holes will be grouted from the outside and inside of the manhole.

2. Manholes constructed of other materials may be approved by the public works department or designated consultant, provided they meet the requirements of Section 2.318 of the Department of Ecology's "Criteria for Sewage Works Design." Material specifications need to be submitted for review before an alternate material will be considered. See Standard Drawings 5-1 and 5-2 for details.

3. Eccentric manhole cone will be offset so as not to be located in the tire track of a traveled lane.

4. Manhole frames and covers will be cast iron casting marked "SEWER" conforming to the requirements of ASTM A-30, Class 25, and will be free of porosity, shrink cavities, cold shuts, cracks, or any surface defects which would impair serviceability. Repairs of defects by welding or by the use of smooth-on or similar material will not be permitted. Manhole rings and covers will be machine-finished or ground-on seating surfaces so as to assure nonrocking fit in any position and interchangeability. Manholes located in areas subject to inflow will be equipped with an approved watertight manhole insert.

5. Where lock-type castings are called for, the casting device will be such that the cover may be readily released from the ring and all movable parts will be made of

noncorrosive materials and otherwise arranged to avoid possible binding. The locking device will be made of a noncorrosive material or properly coated to protect against corrosion. All casting will be coated with a bituminous coating prior to delivery to the job site.

6. Safety steps will be fabricated of polypropylene conforming to an ASTM D-4101 specification, injection molded around a one-half-inch ASTM A-615 grade 60 steel reinforcing bar with antislip tread. Steps will project uniformly from the inside wall of the manhole. Steps will be installed to form a continuous vertical ladder with rungs equally spaced on 12-inch centers.

7. Manholes will be placed at standard maximum 300-foot intervals, and at changes in direction, grade or pipe size. Slope through the manhole will be one-tenth of one foot from invert in to invert out unless otherwise approved by the public works department or designated consultant.

8. Where a smaller sewer joint joins a larger one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 80 percent depth point of both sewers at the same elevation. Pipe material will be consistent between manholes.

9. Straight grades between invert out of last manhole and connection to existing are preferred over drops whenever possible. Care must be taken when designing steep grades so as not to create a situation of excessive velocity or excavation. Grade changes associated with "sweeps" will not be allowed. The angle between the line(s) entering a manhole and the line leaving will be no less than 90 degrees.

10. An outside drop connection will be provided for a sewer entering a manhole at an elevation of 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches, the invert will be filleted to prevent solids deposition. Outside drop structures will be constructed per Standard Drawing 5-4.

11. All manholes that are to be owned and maintained by the city will be accessible at all times to operations, maintenance equipment and vehicles. All-weather access drives may be required to provide a sufficient driving surface for city vehicles, at the discretion of the director of public works.

12. Manhole sizing will be determined by the following criteria:

- a. Forty-Eight-Inch Manhole.
  - i. Two connecting pipes, eight- to 12-inch diameter;
  - ii. Three connecting pipes, eight- to 10-inch diameter, perpendicular;
  - iii. Four connecting pipes, eight-inch diameter, perpendicular.
- b. Fifty-Four-Inch Manhole.
  - i. Two connecting pipes, eight- to 12-inch diameter with greater than a 45-degree deflection;
  - ii. Three connecting pipes, 10- to 12-inch diameter, perpendicular;
  - iii. Four connecting pipes, 10- to 12-inch diameter, perpendicular.
- c. Seventy-Two-Inch Manhole.
  - i. Two connecting pipes, 15- to 18-inch diameter with less than a 45-degree deflection;
  - ii. Three connecting pipes, 15-inch diameter, perpendicular;
  - iii. Four connecting pipes, 15-inch diameter, perpendicular.

In the above criteria “deflection” refers to the angle between any two inlet pipe channels in the manhole.

The intent of the noted configurations is to provide adequate shelves and room for maintenance and performing television inspections. For other pipe configurations, the size of the manhole will be approved by the public works department or designated consultant.

F. High Velocity Protection. Where velocities greater than 15 feet per second are expected, special provisions such as thrust blocking and specific piping materials will be made to protect against displacement and hydrogen sulfide gas.

G. Cleanouts. Cleanouts are not an acceptable substitute for manholes; however, they may be used in lieu of manholes at the end of eight-inch-diameter lines of not more than 150 feet in length. Location of cleanout for building sewer is governed by sewer ordinances as included in the Chehalis Municipal Code and the Uniform Plumbing Code as adopted by the city.

All cleanouts in a right-of-way will be extended to grade and a three-foot-square by four-inch-thick concrete pad will be installed around all cleanouts that are not in a pavement area. See Standard Drawing 5-5.

H. Sewer Service to Private Properties. “Building sewer” refers to the extension from a building’s discharge plumbing (two feet outside of the building) to the edge of pavement or curb line and will have no other common sewers discharging into it. Building sewers will be a minimum diameter of four inches for residential service and six inches for all other services. Maintenance of the building sewer is the responsibility of the property owner.

“Sewer lateral” refers to the extension from the building sewer at the end of pavement or curb line to the sewer main. Sewer laterals will be a minimum diameter of six inches. Maintenance of the sewer lateral is the responsibility of the city. Each property will be served by an individual sewer lateral. In addition, each unit of a duplex will be served by separate laterals.

Prior to connection or installation of building sewers or sewer laterals, a side sewer permit must be obtained from the city. Materials and design criteria for a building sewer are covered by the Uniform Plumbing Code (UPC) as adopted by the city. Inspection of the sewer lateral and building sewer from two feet outside the structure to the sewer main is the responsibility of the engineering division.

In order to avoid the possibility of backup in the sewer lateral from head pressures in the sewer main, the public works department or designated consultant may require that a backwater valve be installed at the property owner’s expense. Operation and maintenance of the backwater valve will be the responsibility of the property owner. [Ord. 819B §§ 13, 17, 2007; Ord. 785B § 14 (5B), 2005.]

#### **12.04.590 Lift stations.**

A. General. All lift stations will be designed to serve the appropriate basin as identified in the most recent version of the city of Chehalis comprehensive sanitary sewer plan.

B. Design Standards. The design of any lift station will conform to city standards, the Department of Ecology’s “Criteria for Sewage Works Design,” and applicable standards as set forth in CMC [12.04.070](#) and [12.04.160](#). Each lift station will be evaluated for buoyancy resistance using site-specific soil and ground water information.

The following equipment, features, and special modifications are standard requirements for all permanent wastewater lift stations constructed as part of the city's wastewater conveyance system. The following requirements are minimum standards and not all-inclusive:

1. General.

a. The proponent of the lift station is required to provide the city of Chehalis with a site located outside of the right-of-way. The land will be deeded to the city and will have sufficient area dimensions that allow for easy and safe access to the lift station.

b. A concrete slab six inches in depth will surround the lift station well(s), with a minimum of two feet of side exposure for all openings. The slab will be installed at ground level.

c. An access road, with easement, that will support 20,000-pound axle loads throughout the year will be provided from the nearest public road to the station, to allow for maintenance of the station.

d. Station entry access will be keyed to match all other city lift stations.

e. The entry lid to the station wet well will be located as close as practical to the access drive. The lift stations will be accessible at all times to operations and maintenance equipment and vehicles.

f. Safety guards will be provided for all exposed drivelines and couplings.

g. Spare parts will be provided as recommended by the manufacturer, with a minimum of one impeller, one complete set of seals, filters and one set of volute gaskets. Four complete sets of O&M manuals and a list of the nearest dealers for spare parts and repair will be provided. All replacement parts will be readily available from a distributor in the U.S.A.

h. The lift station will include at least two pumps, each one sized to handle all of the flow that the station will accept.

i. The pumps, motor, and wet well will be in compliance with current engineering practice. They will be fully compatible as an assembly, and will be engineered for the specific service area.

j. All hardware and other basic mechanical parts (not including piping and valves) internal to the wet well will be stainless steel, including float hangers, anchor bolts, cable systems, etc.

k. The station will be designed to include an isolation valve located in the discharge line between the station and the pumping bypass port, no less than 12 pipe diameters from the dry well.

l. City water will be provided to the station for hose down and pump seal supply. An approved backflow prevention device will be provided on the water supply line outside the dry well to protect the public water system. The backflow device will be tested and certified by a licensed cross-connection control specialist (CCS) prior to acceptance of the system.

m. A 100-amp minimum 480/277-volt three-phase four-wire main service will be provided as per plans. The service will be sized to accommodate the requirements of the pump station.

n. All electrical equipment will be enclosed in a freestanding, vandalproof, all-weather enclosure NEMA 3R or better.

o. A minimum 100-amp, 480/240-volt, three-phase emergency power hookup will be provided as necessary to serve the pump station. The transfer switch will be sized to accommodate the load with a 100-amp minimum.

p. Overhead lights will be operated with a manual switch.

q. Wiring will be THHN stranded copper.

r. Lift station telemetry will be compatible with the system in use by the city at the time of proposed construction. The telemetry will transmit and receive signals through a phone line. The system will be installed entirely by the contractor. The telemetry will be enclosed in a NEMA 1 enclosure within the electrical cabinet. The public works department will have final approval authority over the telemetry system that will be used.

s. Conduit will be galvanized, or of a noncorrosive material as approved by the city, except conduit that penetrates a wet well or corrosive environment will be coated rigid PVC.

t. Pump motors will be three-phase, 480 or 240 volt, and provided with elapsed time meters.

u. Pump control system will be of the solid-state programmable logic controller (PLC) type, US Filter D620 or approved equal. The system will possess a solid-state liquid level-sensing device of a 4-20mA analog design. The controller will be readily accessible for ease of maintenance. The public works department will have final approval authority over the control system that will be used.

v. Lift stations will be designed to accommodate a confined space entry davit, as utilized by the public works department. An appropriate bracket unit will be included with the station at the wet well entry lid to support the city's confined space entry equipment.

w. The lift station will include the following alarm and station status points, as applicable:

Wet Well Level	Pump #2
Low Wet Well	Run
High Wet Well	Auto
Dry Well Flood	Off
Seal Pressure	Seal Failure
Pump #1	VFD #2 Failure
Run	AC Power Failure
Auto	Generator Run
Off	Generator Fail
Seal Failure	Intrusion
VFD #1 Failure	Fire

x. Provide for a minimum of 45 seconds pump run time per pump cycle and a maximum of 10 pump starts per hour.

y. Plans and specifications must be submitted to the public works department and approved in writing prior to ordering a package lift station.

## 2. Wet Well/Dry Well.

- a. The dry well will be vented with an exhaust fan to meet state safety standards.
  - b. Wet well will be equipped with a permanent, attached, full-depth, internal, galvanized access ladder. The ladder will be galvanized or of a noncorrosive material as approved by the city.
  - c. Entry lid to the station dry well will be constructed of rustproof coating or fiberglass.
  - d. Dry wells will be provided with an automatic sump pump plumbed to lift station wet well.
  - e. Dry wells will be provided with dehumidifier equipment appropriately sized to remove moisture from the dry well.
3. Submersible.
- a. Lift station will be designed so as not to require entry into the wet well for any but emergency needs.
  - b. Provide pump removal system made with stainless steel pipe guide rails. Cable guide pump removal systems will not be considered.
  - c. Control panel and all other electrical enclosures will be mounted on stainless steel unistrut.
  - d. Water service to the station will be provided through a frost-free hydrant set within 10 feet of the wet well hatch. The hydrant will be located so as not to create a hazard to pedestrians or traffic. The public works department will have final approval authority over the hydrant location. [Ord. 785B § 14 (5C), 2005.]

#### **12.04.600 Pressure sewer (force main).**

A. General. Low-pressure systems, i.e., force mains, may be considered for situations where high ground water table or topography makes gravity sewer impractical. STEP systems are addressed separately in CMC [12.04.610](#).

B. Design Standards. The design of any sewer extension/connection will conform to city standards, the Department of Ecology's "Criteria of Sewage Works Design," and any applicable standards as set forth herein and in CMC [12.04.070](#) and [12.04.160](#).

The layout of extensions will provide for the future continuation of the existing system as determined by the city. In addition, main extensions will be extended to and across the side of the affected property fronting the main.

The system will be designed at full depth of flow on the basis of an average daily per capita flow as shown on the table in CMC [12.04.580](#)(B). A coefficient of friction of 120 will be used for the Hazen-Williams "C" value.

New sewer systems will be designed by methods in conjunction with the basis of per capita flow rates. Methods will include the use of peaking factors for the contributing area, allowances for future commercial and industrial areas, and modification of per capita flow rates based on specific data. Documentation of the alternative method used will be provided along with plans. Applicable general notes in CMC [12.04.570](#) will be included on all plans dealing with pressure sanitary sewer design.

#### **C. Force Main.**

1. Material. Force mains up to 12 inches will be ductile iron AWWA C151 Class 50 or PVC C900 with ductile iron fittings and gasket joints. For 14- to 24-inch mains, pipe will be ductile iron C151 Class 50 or PVC C905 with ductile iron fittings and gasket joints. A more rigid pipe may be required where unlimited trench widths occur. All ductile



iron pipe and fittings will be epoxy coated or PE lined and designed for use with corrosive materials.

2. Depth. Force mains will have a minimum 36 inches of cover to top of pipe. See CMC [12.04.480](#) for sanitary sewer/water main crossing requirements.

3. Velocity. The minimum velocity allowed is two feet per second (fps) at average dry weather flow. Two fps is required to maintain solids in suspension although three fps is desired to scour settled solids. Maximum velocity allowed will be eight fps.

4. Locate. Force mains will include toning wire, cathodic protection and tracer tape installed in accordance with requirements herein.

D. Air/Vacuum Valves. Air release valves and air/vacuum valves will be located at the high points of the line within a manhole or approved vault that provides 18 inches of clearance on all sides between the assembly of the wall(s). Air release valves will be fitted with an activated carbon canister to prevent the release of disagreeable odors to the surrounding area. Grades will be designed to minimize the need for air/vacuum valves when practical. Vehicular access to the valve is required for maintenance.

E. Force Main Drain. Provisions to drain a force main to facilitate repairs or to temporarily remove a force main from service will be provided. This may be accomplished through the use of a valved tee connected to a drain line at its low point with isolation valves on both sides of the tee along the main. A manhole will be set over the force main at the valved tee to provide a sump for the wastewater to be drained into.

F. Thrust Blocking. Location of thrust blocking will be shown on plans. Thrust block concrete will be Class B, 3,000 psi, poured against undisturbed earth. A plastic barrier will be placed between all thrust blocks and fittings.

See Standard Drawings 4-13 and 4-14. Restraining joint systems may be allowed in lieu of thrust blocking when designed by a licensed engineer and approved by the public works department or designated consultant. Restraining joint brand, type, and size will be specified on the plans.

G. Force Main Termination. Hydrogen sulfide (H<sub>2</sub>S) odors and the buildup of sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) occur in the operation of a force main. To mitigate these conditions, some type of control method(s) will be used. This may include chemical addition at the pump station and/or the re-aeration of the wastewater at or near the terminus. The means of re-aeration will be approved by the public works department or designated consultant.

The outfall manhole (point of connection where force main discharges into gravity sewer) and the next downstream manhole on the gravity sewer will be protected against corrosion. The means of protection will be approved by the public works department or designated consultant and may include spray-on coatings and PVC linings. If a PVC lining is used, it will be cast into the wall and floor of the manhole. No exposed concrete will be permitted.

#### H. Pigging Ports.

1. A pipeline pig is a projectile that is forced through the inside of a pipe to clean pressure pipeline. A pigging port is used as a point to send or retrieve the pig. Pigging ports will be located outside of paved areas but within the right-of-way as shown in Standard Drawing 5-15.

2. Pigging ports may be required:

- a. At a change in pipeline size;
- b. At the end of a dead-end line;

c. No farther apart than every 3,000 feet.

These locations are subject to review and approval by the public works department. [Ord. 819B § 13, 2007; Ord. 785B § 14 (5D), 2005.]

**12.04.610 STEP system.**

A. General. A septic tank effluent pump (STEP) system is a facility consisting of a tank or tanks for settling and digesting wastewater solids, and a pressure piping system for conveying the supernatant liquid into the sewer system. Only sanitary wastewater will be discharged into the tank. Roof drains and other storm water sources will be strictly excluded. A STEP system may be installed to serve residential locations where approved by the city. A proposed site plan is required for each STEP system. Any new single-family subdivision designed with STEP sewers will include an easement on the face of the plat for access to all lots.

Operation and maintenance of the public portion of the STEP system will be the responsibility of the city only after the system has been inspected and approved and an easement is granted to the city and the warranty period of one year has expired. The public portion of the STEP system is defined as the STEP main and other components that are common or shared by all customers connected to the system as well as those portions of the individual service lines located under city streets and curbs. Operation and maintenance of the tank, pump, pump controls, and service lines located outside of city streets will be the responsibility of the property owner.

All STEP system customers are required to pump their tank(s) and have the pump system inspected every four years, unless conditions dictate a more frequent schedule. The inspection is to be conducted by a licensed plumbing contractor qualified to perform such work. The customer will provide the city with proof of having the pumping and inspection work accomplished. The city will maintain the records of the pumping and inspection work for each STEP customer on the city sewer system. If a STEP customer fails to have the scheduled pumping and inspection conducted, the city may elect to have the work performed. All costs associated with this work will be billed to the customer through their regular utility bill.

Power will be provided and paid for by the STEP customer. The customer will be responsible for taking corrective actions in a timely manner whenever an alarm is activated or maintenance and repairs become necessary. All sewer piping, drains, and plumbing between the street curb or edge of pavement and the building being served will be the responsibility of the customer. The customer will be responsible to curtail water usage during times of STEP system malfunction until such problems are corrected. The city will not accept responsibility for damages resulting from plumbing backups or other problems associated with STEP system facilities or plumbing that the customer is responsible for.

Currently, only the Orenco STEP pump system shown in Standard Drawing 5-7 has been approved by the city of Chehalis. However, other suppliers of STEP system components will be considered if equal to the Orenco product. The specifications must be submitted to the public works department and the engineering division for review and approval prior to inclusion with a proposed STEP system.

The outfall manhole where the STEP system main discharges into the gravity sewer and the next downstream manhole will be lined to protect them against corrosion. The means of protection will be approved by the public works department and the

engineering division and may include spray-on coatings and PVC linings. If a PVC lining is used, it will be cast into the wall and floor of the manhole. No exposed concrete will be permitted.

B. Design Standards. The design of any STEP sewer system will conform to city standards and any applicable standards as set forth in CMC [12.04.070](#) and [12.04.160](#).

The layout of extensions will provide for the future continuation of the existing system as determined by the city. In addition, STEP mains will be extended to and through the side of the affected property fronting the main. Individual service boxes will be located at or near the center of each lot, at least 10 feet from a city water meter.

Pump and pipeline sizing will conform to the criteria as set forth in the most recent version of the Chehalis general sewer plan. Also, the applicable general notes in CMC [12.04.570](#) will be included on any plans dealing with STEP system design.

#### C. Pipe.

1. Mainline. The minimum pipe size used is two-inch inside diameter. This is based on maintenance requirements rather than flow. Pipe will be PVC Class 200, ASTM D2241 SDR 21 with rubber gasket joints. Gaskets will comply with ASTM D1869. STEP mains will have a minimum 36 inches of cover to top of pipe. See CMC [12.04.570](#)(C) for sanitary sewer/water main crossing requirements.

2. Service Line. Service connection pipe will be minimum one-inch diameter, Schedule 80 PVC water pipe, solvent welded connection located at 90 degrees to the mainline, when possible. Solvent cements and primer for joining PVC pipe and fittings will comply with ASTM D2564 and will be used as recommended by the pipe and fitting manufacturers.

Services will have a minimum 24 inches of cover over the top of the pipe. Pressure services crossing over any water line will follow DOE requirements.

3. Building Sewer. The gravity building sewer between the building and the tank will be designed and installed in accordance with the Uniform Plumbing Code as adopted in the Chehalis Municipal Code.

4. All pipe will be installed with continuous tracer tape set 12 to 18 inches under the proposed finished grade. The marker tape will be marked "SEWER" and will be plastic, nonbiodegradable, metal core, or backing that can be detected by a standard metal detector. Tape will be Terra Tape "D" or approved equal. In addition to tracer tape, 14-gauge coated copper wire will be wrapped around the pipe, and then brought up and tied off at the valve boxes.

A one-pound magnesium anode will be buried with the sewer line every 1,000 linear feet for cathodic protection of the wire. Toning wire splices and connections to anodes will join wires both mechanically and electrically and will employ epoxy resin or heat shrink tape insulation. Furnishing and installing the tracer wire and anodes will be incidental to pipe installation.

D. Fittings. All pipe fittings will have a minimum working pressure rating equal to the pipe to which they are connected. Fittings will be PVC 1120, rubber joint complying with ASTM D-1784, D-2466, or D-2467, for pipe larger than one inch. Solvent weld fittings for one-inch pipe will be socket type Schedule 40 and will comply with ASTM D-1784 and ASTM D-2466.

#### E. Valves.

1. Ball and Gate Valves. All one-inch valves will be PVC ball valves with preloaded EPDM stem seals, microfinished PVC ball and self-adjusting polyethylene ball seat to compensate for wear and prevent overtightening. Valves will be designed for use with corrosive fluids, for low torque manual operation, and for a working pressure of 150 psi. All one-inch valves will be LT-1000-S as manufactured by KBI (King Brothers Industries) or GF500 as manufactured by George Fisher Signet, Inc.

All two-inch and larger valves will be resilient wedge gate M&H Style 820 or Waterous Series 500 plug valves with an epoxy coating to resist corrosion. A ball or gate valve will be located at every intersection and at a maximum of every 500 feet. Valves may be installed in conjunction with required pigging ports.

2. Air/Vacuum Valves. Air release and air/vacuum valves will be located at the high points of the line. Profiles for each pipe run will be submitted with the hydraulic gradeline for both static and dynamic flow conditions to show where the critical points are for air release valves. Vehicular access to air/vacuum valves is required for maintenance.

Because the air released by these valves will contain hydrogen sulfide, the valves and their enclosures have to be constructed of corrosion-resistant materials. The valve vaults will also have insulated lids to prevent freezing. The air released from the valve will be quite odoriferous, thus, each vent will be equipped with an odor control system such as activated carbon filters impregnated with sodium hydroxide.

3. Check Valves. Check valves used on service lines will be a tee or wye pattern swing check, PVC. It will have a working pressure of 150 psi. Valves will be designed for use with corrosive fluids. A check valve will be installed at the end of the service stub-out at the property line to be installed in a valve box located at or near the center of the lot at least 10 feet from any water meter. Check valves will be King Brothers Industries, KSC or approved equal.

4. Pressure-Sustaining Valve Assembly. Pressure-sustaining valves are sometimes required in the design of STEP systems to keep the pipeline full during periods of low or no flow or when siphoning conditions exist.

The pressure-sustaining valve will maintain inlet pressure at a preestablished set point, as determined by the city. It will open as pressure starts to increase above the set point and close as pressure falls below the set point. In the open position, flow will enter the valve in a direction axial to the pipe, turn radially outward through a slotted grillwork, and then inward to the former inlet axial direction. The valve will be constructed of two parts: a 316 stainless steel body and an elastometric liner or control element. The valve will be roll seal valve as manufactured by the Roll Seal Valve Company, Inc., or approved equal.

5. Pressure-sustaining valve vaults will be pre-cast, reinforced concrete vaults with spring-assisted hinged galvanized steel doors that open to a minimum of 36 inches by 60 inches clear opening and will be marked "SEWER." The entire unit will be rated for H-20 traffic load and have extensions as needed.

6. The pressure tank will consist of a steel tank containing a sealed-in-place heavy-duty diaphragm that separates air from the water. The portion of the tank where water is stored will be coated with an FDA-approved fusion-bonded polymeric lining material that isolates water from the metal tank and protects the tank from corrosion. The tank will be suitable for direct bury or continuous operation in a damp environment.

The tank will be similar in all respects to an Aqua-Air, V-45B as manufactured by A.O. Smith, Consumer Products Division, Inc., or approved equal.

7. Valve box lids will be marked "SEWER" so they can quickly be distinguished from valves in the water system.

8. All service connect boxes will be Carson Model 1419 with hinged bolt down covers and 1419E extension box as required or approved equal.

F. Pigging Ports. Pigging ports may be required as noted in CMC [12.04.600\(H\)](#).

G. STEP System Septic Tank.

1. Tanks for single-family residential use will be rectangular, pre-cast concrete, single chamber, and designed by a registered structural engineer. Fiberglass or polyethylene tanks will be allowed. Dual chamber tanks may be required in certain instances as determined by the public works department and the engineering division.

2. Tank liquid volumes will be sized as follows:

a. Up to four-bedroom house, 1,000 gallons;

b. Five- to six-bedroom home/duplex, 1,500 gallons.

3. Tank sizes for applications other than those noted will be approved by the city.

4. All tanks will be manufactured to accept pump assemblies or effluent filters and have a pre-cast groove one inch wide by one-half inch deep, 30 inches in diameter, to allow positive attachment of the riser. The manufacturer will provide the structural design and certification for the city to review. The design or analysis will be in accordance with accepted engineering practice. Tanks less than four feet in depth will be designed for the following loading conditions:

a. Top of tank 400 pounds per square foot (psf).

b. Lateral load of 62.4 psf.

c. The tank will be designed to support a 2,500-pound wheel load.

d. The tank will be designed to withstand hydrostatic loading equal to the maximum depth of bury, in addition to the soil loading. Maximum depth of bury will be measured from the ground elevation to the invert of the sewer line entering the tank.

5. Deeper installations, if required by local conditions, will require special consideration, as will tanks located where a vehicle might be driven over them. Traffic-bearing tanks will be designed to withstand an H-20 live load with a minimum soil cover of 18 inches.

6. All tanks will be guaranteed in writing, by the tank manufacturer, for a period of two years from date of delivery to the project. Manufacturer's signed guarantee will accompany delivery.

7. Systems installed on a site where an existing septic tank exists may not use the existing tank. The existing tank must be removed or abandoned per Department of Health and/or Lewis County requirements.

8. Concrete material and construction will meet the requirements of Section 6-02 of the most recent edition of WSDOT/APWA Standard Specifications for Road, Bridge, and Municipal Construction.

9. Walls, bottom and top of reinforced-concrete tanks will be designed across the shortest dimension using one-way slab analysis. Stresses in each face of monolithically constructed tanks may be determined by analyzing the tank cross-section as a continuous fixed frame. The walls and bottom slab will be poured monolithically.

Concrete will achieve a minimum 28-day compressive strength of 5,000 psi. The concrete mix will not be modified unless the mix design is reviewed and approved by the city.

10. Reinforcing steel will be ASTM A-615, Grade 60,  $f_y = 60,000$  psi. Details and placement will be in accordance with ACI 315 and ACI 318.

11. Tanks will be protected, by applying a heavy cement-base waterproof coating, Thoroseal or equal, on both the inside and outside surfaces.

12. Tanks will be manufactured and furnished with 18-inch diameter access openings of the size and configuration shown on the standard drawings. Modification of completed or existing tanks will not be permitted for structural, warranty, and liability reasons. Tanks will be furnished without concrete access hole lids. In order to demonstrate watertightness, tanks will be tested prior to acceptance. Each tank will be tested at the factory by filling with water to the base of the riser and letting it stand. After 24 hours the tank will be refilled to the soffit and the exfiltration rate will be determined by measuring the water loss during the next two hours. The two-hour water loss will not exceed one gallon.

13. The tank will not be moved from the manufacturing site to the job site until it has cured for seven days and has reached two-thirds of the design strength.

14. Tanks will be bedded on six inches of sand or pea gravel. Sides will be compacted in two-foot lifts to the same or greater density than the surrounding area.

15. After the tanks have been set in place and the riser installed, but prior to backfilling, each tank will be tested by filling the tank to two inches above the base of the riser for a two-hour period. Water loss will not exceed one gallon.

16. Tanks installed where ground water levels are above tank bottom require precautions to prevent flotation. In general, tanks will immediately be filled with water and will not be pumped down more than three feet below top.

17. Tank excavation will be backfilled with select material free of boulders and compacted to a dry density equal to or greater than that of the adjacent, undisturbed soil. Finish grading, cleanup, and restoration will be completed prior to final acceptance by the city.

#### H. Tank Riser.

1. Outlet risers will be 30-inch diameter fiberglass or ribbed PVC as manufactured by Orenco Systems, Inc., or approved equal. Outlet riser will be a minimum of 18 inches high or as otherwise shown on the engineering drawings. Outlet risers will be factory-equipped with the following:

a. Two one-inch or one-and-one-fourth-inch diameter (IPS) neoprene grommets, one for the pump discharge, installed eight to 10 inches from the top of the riser, and one for the splice box conduit.

b. A PVC splice box, with four cord grips and one one-inch outlet fitting, Orenco Model No. SB41 or approved equal.

2. A lid will be furnished with each riser. It will be a latching type and will be constructed of fiberglass with an aggregate finish. Riser and lid combination will be able to support a 2,500-pound wheel load. This does not imply that PVC risers are intended for traffic areas. All valves and unions will be no more than 12 inches deep in riser.

3. Each riser will be bonded to the top of the concrete tank with a two-part epoxy that will be supplied with the riser by the manufacturer. The epoxy will be applied in

accordance with the manufacturer's recommendations. A generous bead of epoxy will be laid completely around the bottom of the tank. After the riser is in place, a generous fillet will be run completely around the inside base. The epoxy will be allowed a minimum of four hours' curing time at 64 degrees Fahrenheit; otherwise a greater time will be required based on the manufacturer's recommendations before backfill is placed over tank. Epoxy will be placed in an adequate amount to properly bond with the riser components. Care will be exercised during the curing period to avoid dislodging the riser or disrupting the watertight seal between the riser and tank.

#### I. Pumping Equipment.

1. Pumps will be stainless steel, thermoplastic, or coated inside and out with baked-on epoxy paint, UL listed for use in effluent. All pumping systems will be Orenco Systems Model OSI S 4000 Series high head pumping assemblies or approved equal comprised of:

a. Standard vault: 15-inch by 48-inch PVC vault and flow inducer, Orenco Model No. SV 1548FI with eight one-and-three-eighths-inch diameter inlet holes or approved equal.

b. Hose and valve assembly includes one one-inch diameter flexible PVC hose with quick-disconnect fittings and PVC ball valve, Orenco Model No. HV 100 Bfc or approved equal.

c. Mercury switch float assembly, Model MF-ABR or approved equal, with three mercury floats mounted on a PVC stem which attaches to vault and will be wired to the control panel in accordance with manufacturer's color coding, using No. 14 AWG THHN Standard as a minimum.

d. Pump: OSI High Head, one-third hp or one-half hp, 115V, single phase Model 8 OSI 03 HH or 8 OSI 05 HH, with eight-foot cord and one-eighth-inch bypass orifice for effluent application, or approved equal.

2. All pumping systems will be installed in accordance with the manufacturer's recommendations. Pumps will be accessible for operation and maintenance from ground level.

#### J. Controls and Alarms.

1. All STEP systems will be wired to a dedicated 20-amp breaker that supplies power to the STEP system control box only. This is required to avoid damage or overload to system and appliances. The customer is responsible for the operation and maintenance of the breaker feeder wires that serve the STEP system. All buried power will be installed with continuous tracer tape set 12 inches above the buried power. The marker tape will be plastic, nonbiodegradable, metal core backing marked "Power."

2. Float switch positions on the PVC 3 float assembly are to be set at the following levels:

a. "High level alarm" at nine inches below underside of tank top;

b. "On" at three and one-half inches below "high level alarm" and "off," in same float as "on" set three and one-half inches below "on";

c. "Redundant off" with "low level alarm" set four inches below "off."

3. Control panels will be Orenco Systems Model S-IRODS (redundant off with disconnect assembly) or approved equal with the following features:

a. Rating: one hp/115 VAC, two hp/230 VAC, single phase, 60 Hz. Motor start contact will be rated for 25 FLA, single phase, 60 Hz.

b. Audible alarm, panel mount with a minimum of 80 db sound pressure at 24 inches continuous sound. Alarm will be located within sight from the tank, when practical.

c. Oiltight visual alarm, red lens, with push-to-silence feature.

d. Automatic audio-alarm reset.

e. A 15-amp motor rated toggle switch, single-pole, double-throw with three positions: manual (MAN), center (OFF) and automatic (AUTO).

f. NEMA 4X-rated fiberglass enclosure with gasket, hinged cover, and locking latch.

g. Alarm circuit will be wired separately from the pump so that if the internal pump overload switch is tripped, the alarm will still function.

h. A 20-amp power disconnect assembly toggle switch to de-energize entire control panel, to permit servicing panel without access to the customer's breaker switches. The pump control panel will be mounted on the side of the house nearest the tank and pump, preferably on a portion of the structure not intended for occupancy. The control panel will be located within sight of the tank in all cases and of the street where practical. The panel will be between four and five feet above finished grade.

i. There will be a dedicated 20-amp circuit breaker serving the pump control panel.

j. Control panel will contain hour meter and event counter bases so the meter and counter may be moved from one installation to another. [Ord. 785B § 14 (5E), 2005.]

#### **12.04.620 Grease trap/grease interceptor.**

A. General. Acceptable grease traps or grease interceptors will be required for all restaurants, commercial kitchens, industrial processing facilities or other facilities where fats, oils or grease (FOG) could be otherwise discharged to the sanitary sewer system. Such equipment will be operated and/or maintained by the owner or operator of such facilities so as to eliminate the discharge of these substances to the sanitary sewer system. Grease traps and interceptors will be designed in accordance with the most recent edition of the Uniform Plumbing Code (UPC) as well as these standards.

Grease traps and grease interceptors are placed on "gray" water drain lines from fixtures that discharge high concentration levels of FOG. They are generally installed on premises that have kitchens and/or food preparation facilities for large numbers of people. These facilities include restaurants/food services, hotels/motels, schools, and institutions.

The purpose of a grease trap or a grease interceptor is to provide a place for the wastewater to reach a semiquiescent state and cool sufficiently, allowing the liquefied FOG to solidify and be retained through separation before the wastewater reaches the sanitary sewer system. The retained FOG is regularly cleaned and/or pumped out. The maintenance frequency varies with each facility and will be established by a representative from the wastewater division.

1. Grease Trap. A grease trap is a device designed to retain FOG from a source of up to four fixtures. Grease traps are usually located near the fixtures being served, inside the facility. The connection of dishwashers to grease traps will be avoided when practical. The maximum liquid temperature through a grease trap will be 90 degrees



Fahrenheit. A dump valve may be required to ensure the liquid temperature standard is maintained, at the discretion of the public works department.

All grease traps will be regularly maintained by the customer at a frequency as determined by the facility characteristics. A maintenance log will be kept on site for recording of all maintenance activity. At a minimum, the log will contain date of maintenance and/or inspection, work performed, and name of individual who performed service.

2. Grease Interceptor. A grease interceptor consists of a tank with a minimum liquid volume of 750 gallons and serves multiple fixtures of a facility. Grease interceptors are generally located outside the facility they serve and are buried underground.

Interceptors will be watertight and constructed of materials not subject to excessive corrosion. Appropriate tank materials include concrete, coated metal, and fiberglass.

Plans for grease interceptors will include dimensions, structural reinforcing, structural calculations, and other pertinent data as determined by the public works department. Interceptors will be designed by a professional engineer licensed in the state of Washington.

B. Location. Grease traps and interceptors will be located in such a manner as to be easily accessible for cleaning, pumping, and sampling. In addition, they will be as close as practical to the fixtures discharging into them. In general, an appropriate location is under a kitchen sink (for traps) or immediately outside the facility served (for interceptors).

C. Design. The following considerations will be factored into the design of a grease trap or interceptor:

1. Capacity of the trap or interceptor;
2. Appropriate baffling at both the inlet and outlet;
3. Accessibility for cleaning and maintenance;
4. Isolation from insects, rodents, and pests;
5. Sufficient liquid travel time between inlet and outlet to ensure separation of the FOG prior to discharge from the unit;
6. Flow control fittings will be installed on the inlet side of smaller traps to protect against overloading and surges from the fixtures;
7. Venting of outdoor interceptors is not required where siphoning of the contents is prevented by providing appropriately sized outlets.

D. Capacity.

1. Grease Interceptor. The size of a grease interceptor will be determined by using the following formula:

$$\text{MPH} \times \text{WR} \times \text{RT} \times \text{SF} = \text{Vol}$$

MPH = number of meals served per peak hour, or seating capacity (whichever is applicable)

WR = cumulative waste flow rate, based on the fixtures

– With dishwasher = six gallons

– Without dishwasher = five gallons

– Single-service kitchen (i.e., no reusable dishes or flatware) = two gallons

– Garbage disposal = one gallon

RT = retention times

- Commercial kitchen = two and one-half hours
- Single-service kitchen = one and one-half hours

SF = storage factor

- Eight-hour operation = one
- Single-service kitchen = one and one-half
- Sixteen-hour operation = two
- Twenty-four-hour operation = three

Vol = minimum interceptor liquid volume in gallons

2. Grease Trap. The capacity of a grease trap will be determined by using the following table:

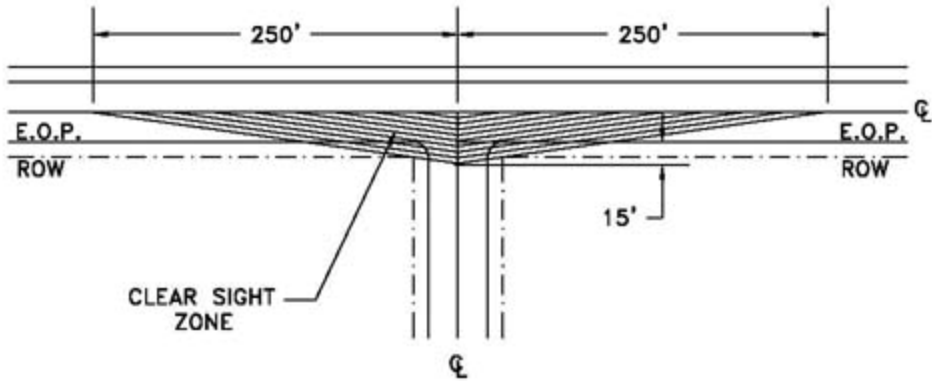
<b>Number of Fixtures</b>	<b>Required Flow Rate (gpm)</b>	<b>Grease Retention (lbs.)</b>
1	20	40
2	25	50
3	35	70
4	50	100

[Ord. 785B § 14 (5F), 2005.]

## **Article VII. Standard Drawings**

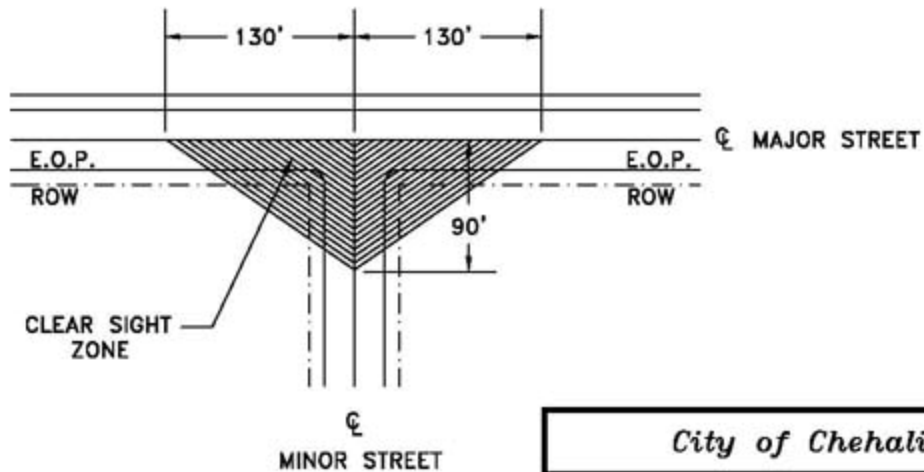
## STOP OR YIELD CONTROLLED INTERSECTIONS

EXAMPLE: MAJOR STREET SPEED LIMIT = 35 M.P.H.



## UNCONTROLLED INTERSECTIONS

EXAMPLE: MAJOR STREET SPEED LIMIT = 30 M.P.H.  
MINOR STREET SPEED LIMIT = 20 M.P.H.



### GENERAL NOTES:

1. SEE SECTION 28.13 OF THE PUBLIC WORKS STANDARDS FOR MORE INFORMATION ON THE VERTICAL CLEARANCE WITHIN THE CLEAR SIGHT ZONE.

DRAWING NOT TO SCALE

*City of Chehalis*

### SIGHT OBSTRUCTION

APPROVED BY

*James R Nichols*

CITY ENGINEER

DWG. NO.

2-1

REVISED DATE

1/02/2003


# PAVEMENT DESIGN—CONSTANTS

	BOULEVARD & ARTERIAL	COMMERCIAL & INDUSTRIAL COLLECTOR	NEIGHBORHOOD COLLECTOR	LOCAL
ADT	20,000	5,000	4,000	500
% ADT	8	15	5	5
GROWTH RATE	5	5	5	2
LANE FACTOR	0.5	0.5	0.5	0.5
DESIGN EAL	3,000,000	1,400,000	370,000	35,000
R%	95	90	85	80
S <sub>o</sub>	0.45	0.45	0.45	0.45
PI	4.20	4.20	4.20	4.20
Pt	2.5	2.4	2.3	2.2
ΔPSI	1.7	1.8	1.9	2.0
<b>MINIMUM PAVEMENT SECTION WITHOUT PAVEMENT DESIGN *</b>				
AC	6"	6"	4"	3"
CSTC	2"	2"	2"	2"
GRAVEL BORROW	24"	24"	18"	12"
<b>MINIMUM PAVEMENT SECTION WITH PAVEMENT DESIGN *</b>				
AC	4"	4"	3"	3"
CSTC	2"	2"	2"	2"
GRAVEL BORROW	12"	12"	8"	8"

\* PAVEMENT DESIGN IS PER AASHTO DESIGN GUIDELINES AND CERTIFIED CALIFORNIA BEARING RATIO (CBR) SOIL TESTS. SEE STANDARD DRAWING 2-3 FOR PAVEMENT DESIGN WORKSHEET.

**NOTE:**

1. USE 2% STREET CROSS SLOPE AND NO MORE THAN 33 FEET OF ROADWAY SLOPED IN ANY DIRECTION.

<i>City of Chehalis</i>	
<b>PAVEMENT DESIGN</b>	
APPROVED BY	DWG. NO.
	2-2
CITY ENGINEER	REVISED DATE
	3/26/2005

# PAVEMENT DESIGN – AASHTO METHOD

SEE PREVIOUS PAGE FOR INPUT IN DOUBLE BOXES (  ) SOIL TEST RESULTS  
 STREET CLASSIFICATION:  MUST BE SUBMITTED  
 INITIAL AADT:  % OF AADTT:  WITH THIS WORKSHEET.  
 GROWTH RATE:

DESIGN LIFE: 20 YEARS  
 DESIGN (EAL):   
 RELIABILITY LEVEL (R%): % STANDARD DEVIATION (S<sub>o</sub>):   
 INITIAL SERVICEABILITY INDEX (PI): 4.2  
 TERMINAL SERVICEABILITY INDEX (Pt):   
 $\Delta PSI = PI - Pt = 4.2 - \text{[ ]} = \text{[ ]}$   
 SUBGRADE: Mr = 1500 x CBR\*  
 CBR VALUE FROM SOIL TEST =  => Mr  psi  
 USING AASHTO DESIGN METHOD:\*\* SN =  , PROVIDE NOMOGRAPH  
 OR CALCULATIONS.

$$SN = (A_1 D_1) + (A_2 D_2) + (A_3 D_3) + (A_4 D_4)$$

STRUCTURAL COEFFICIENT: CLASS B ASPHALT CONCRETE	A <sub>1</sub> =0.42
ASPHALT TREATED BASE	A <sub>2</sub> =0.34
CSTC OR CSBC	A <sub>3</sub> =0.14
BALLAST	A <sub>4</sub> =0.10

\* AASHTO T193: THE CALIFORNIA BEARING RATIO  
 ASTM D1883: BEARING OF LABORATORY COMPACTED SOILS

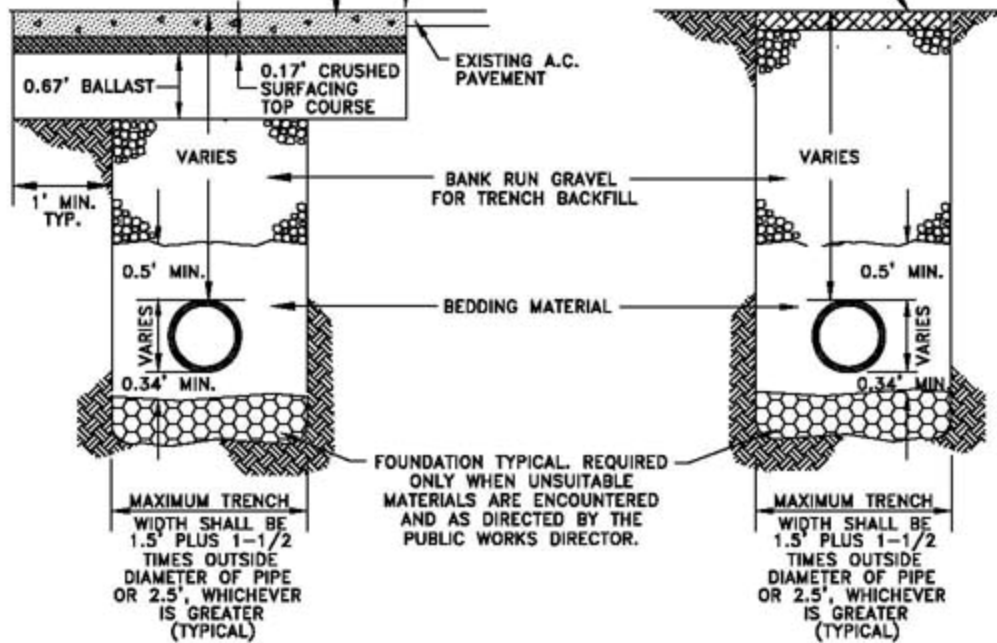
\*\* AASHTO GUIDE FOR DESIGN OF PAVEMENT STRUCTURES

<i>City of Chehalis</i>	
<b>PAVEMENT DESIGN WORKSHEET</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-3
CITY ENGINEER	REVISED DATE
	1/02/2003

MINIMUM 0.25' CLASS 'B' A.C.P. (COMPACTED DEPTH) OR EXISTING PLUS 0.08', WHICHEVER IS GREATER, APPLIED IN MAXIMUM 0.17' LIFTS

EMULSIFIED ASPHALT GRADE CSS-1 TACK SHALL BE APPLIED TO EDGES OF EXISTING PAVEMENT. ALL JOINTS SHALL BE SEALED USING PAVING ASPHALT AR4000W OR APPROVED EQUAL.

0.17' OF TOPSOIL OR CSTC AS NOTED ON PLAN



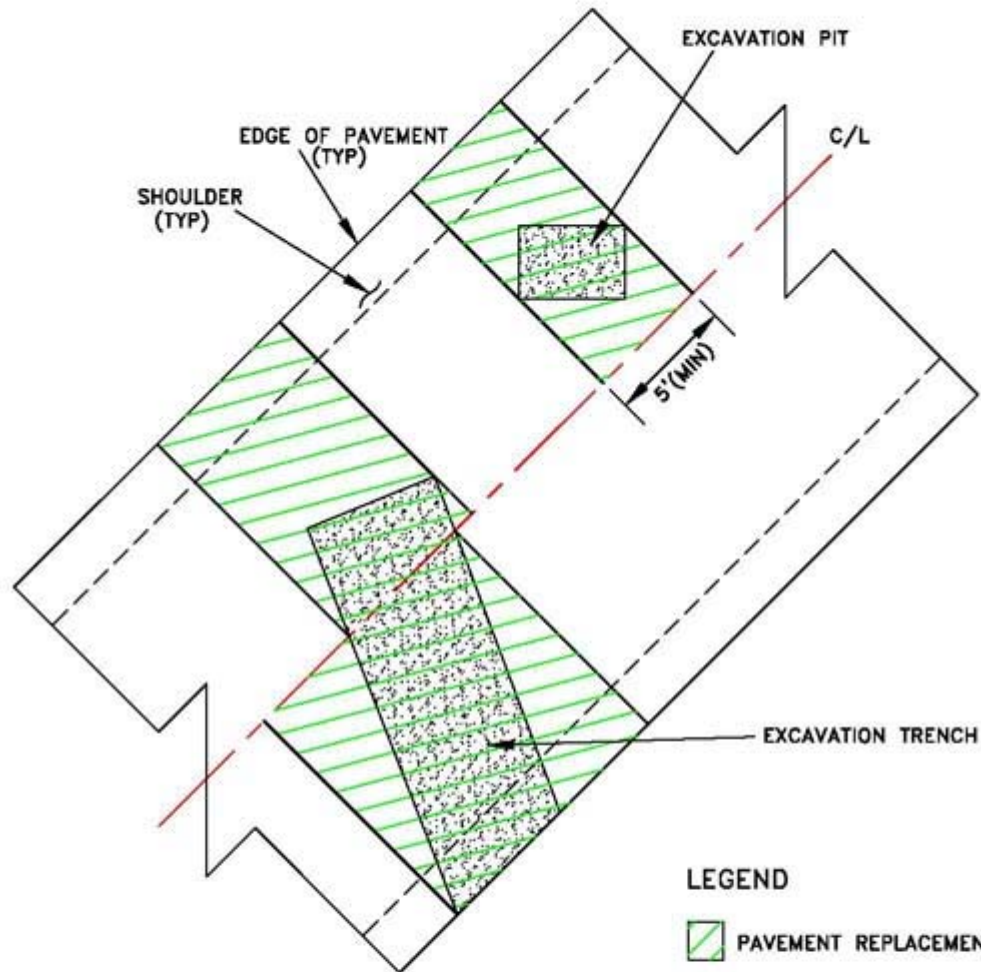
**NOTES:**

1. ALL MATERIALS EXCEPT A.C.P. AND BEDDING MATERIAL SHALL BE COMPACTED IN 6-INCH MAXIMUM LIFTS TO 95% DENSITY.
2. BEDDING SHALL CONFORM TO SECTION 9-03.16 OF STANDARD SPECIFICATIONS AS AMENDED BY CITY OF CHEHALIS STANDARDS.
3. COMPACTION: BEDDING SHALL BE COMPACTED TO 95% MAX. AS DETERMINED BY ASTM D1557. BACKFILL SHALL BE COMPACTED TO 85% IN UNPAVED AREA, AND 95% IN PAVED OR SHOULDER AREAS AS DETERMINED BY ASTM D1557.
4. ALL MATERIALS, WORKMANSHIP, AND INSTALLATION SHALL BE IN CONFORMANCE WITH THE MOST RECENT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION AS AMENDED BY CITY OF CHEHALIS PUBLIC WORKS STANDARDS.
5. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. A BELL JOINT SHALL BE REQUIRED AT EACH JOINT FOR PROPER SUPPORT. NO TEMPORARY SUPPORTS, I.E. BLOCKS, WILL BE ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.

Drawing Not to Scale

<i>City of Chehalis</i>	
<b>TRENCH PAVEMENT RESTORATION DETAIL</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-4
CITY ENGINEER	REVISED DATE
	1/02/2003



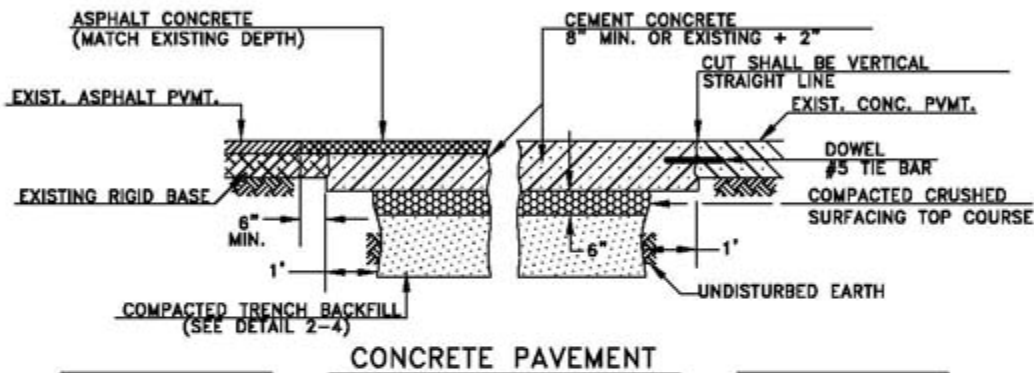
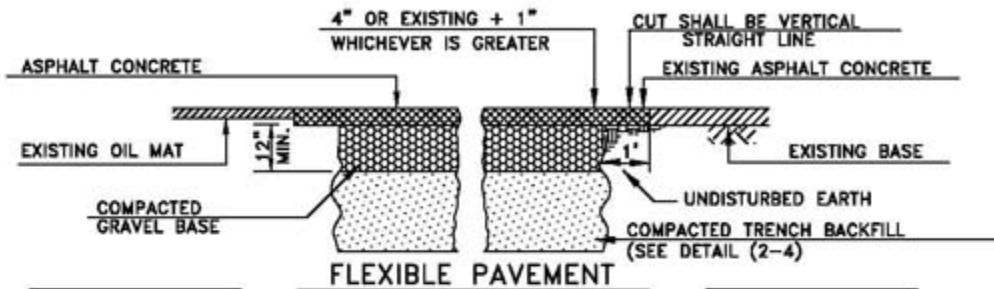


**LEGEND**

-  PAVEMENT REPLACEMENT
-  EXCAVATION

**NOTE:**  
1. MINIMUM RESTORATION WIDTH = 5 FEET

<i>City of Chehalis</i>	
<b>PAVEMENT RESTORATION</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-5
CITY ENGINEER	REVISED DATE
	1/02/2003



CEMENT CONCRETE REPLACEMENT WIDTH	DOWEL BAR LENGTH	SPACING
LESS THAN 4'	16"	18" O.C.
4' - 6'	24"	18" O.C.
GREATER THAN 6'	30"	18" O.C.

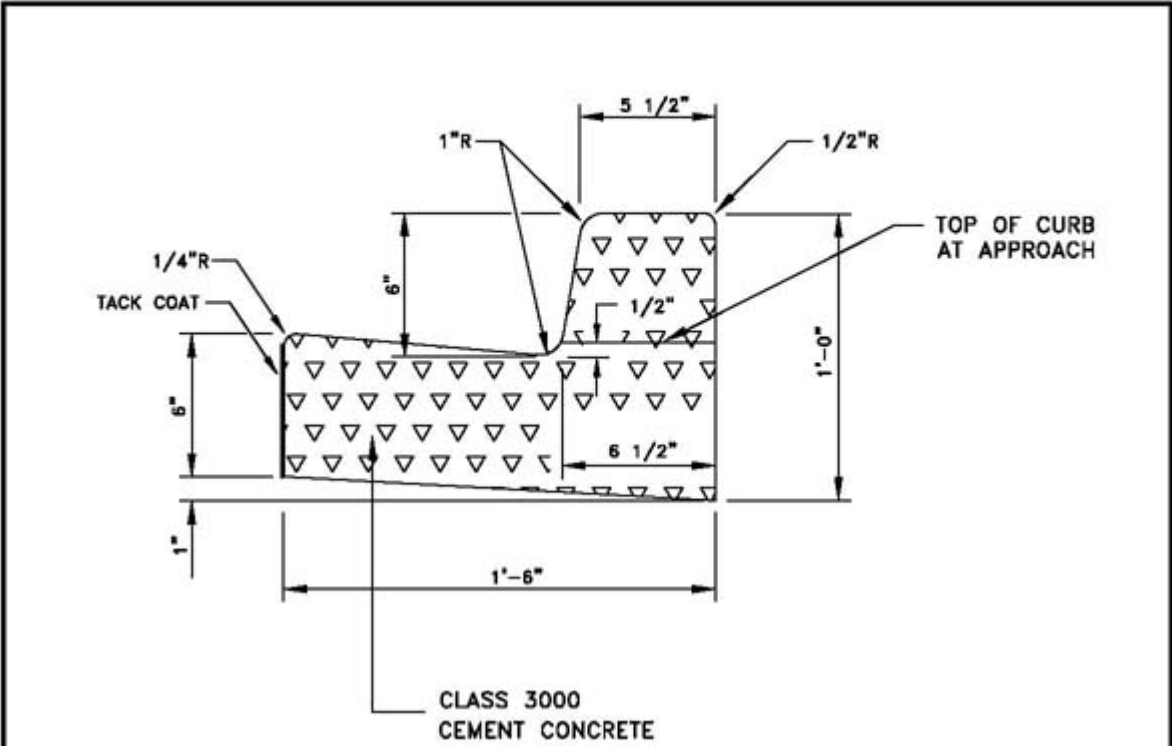
**NOTES:**

1. CONCRETE MIX SHALL BE CLASS 3000 CEMENT CONCRETE.
2. WHEN CUT LINE IS LESS THAN 3' FROM ANOTHER CUTLINE, CURB, OR PAVEMENT EDGE, THE EXISTING PAVEMENT SHALL BE REMOVED TO THE CUTLINES, CURB, OR EDGE.
3. DOWELS ARE NOT REQUIRED ON THE SIDE BORDERING CURBS, LONGITUDINAL EXPANSION JOINTS, OR TRAVERSE CONSTRUCTION JOINTS.
4. DOWELS ARE TO BE INSTALLED A MINIMUM OF 6" INTO EXISTING CONCRETE PAVEMENT.
5. ALL EXISTING PAVEMENT & CONCRETE LOOSENED DURING CONSTRUCTION SHALL BE REMOVED BEFORE PATCH IS INSTALLED.

Drawing Not to Scale

<i>City of Chehalis</i>	
<b>PAVEMENT PATCH</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-6
CITY ENGINEER	REVISED DATE
	1/02/2003



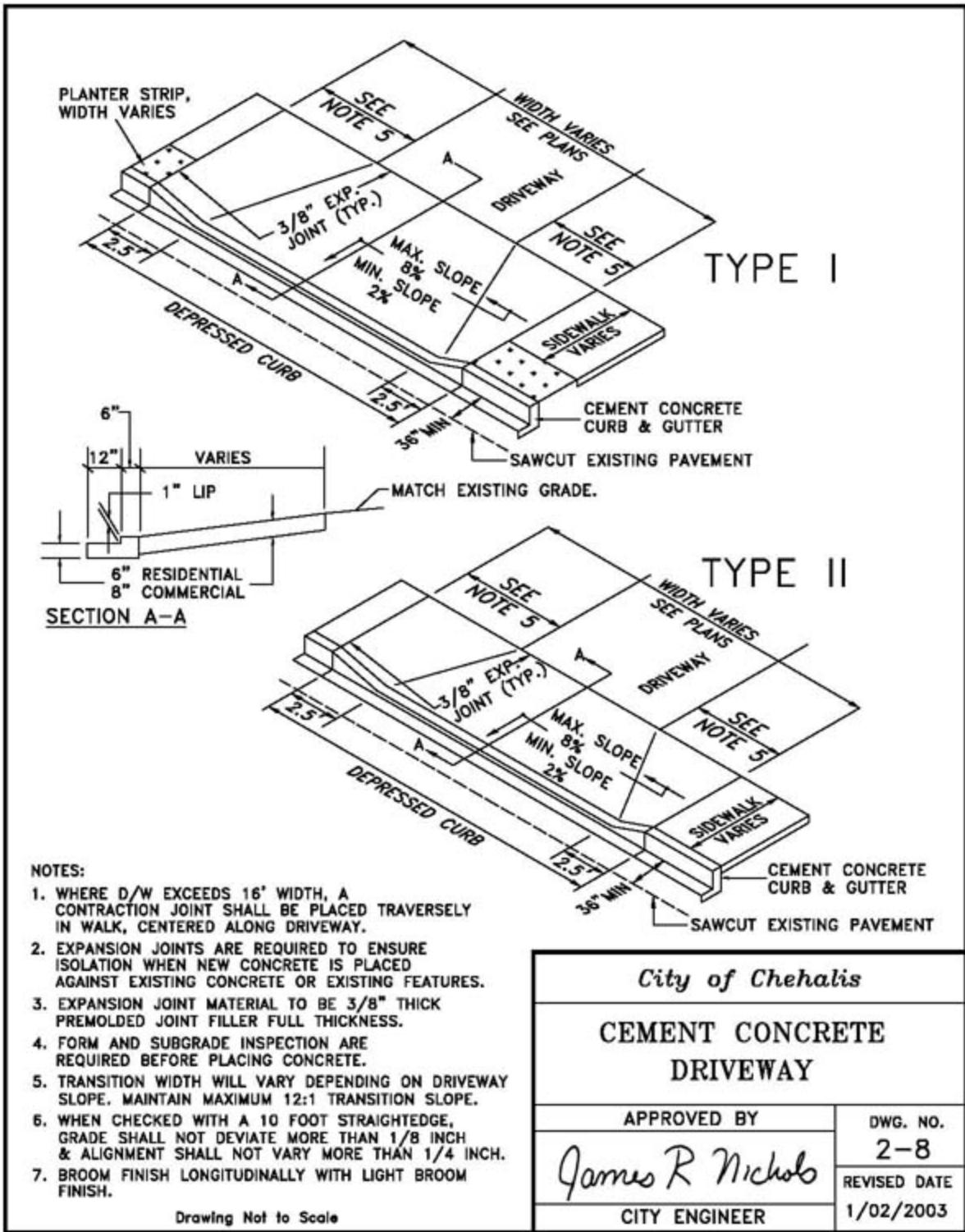


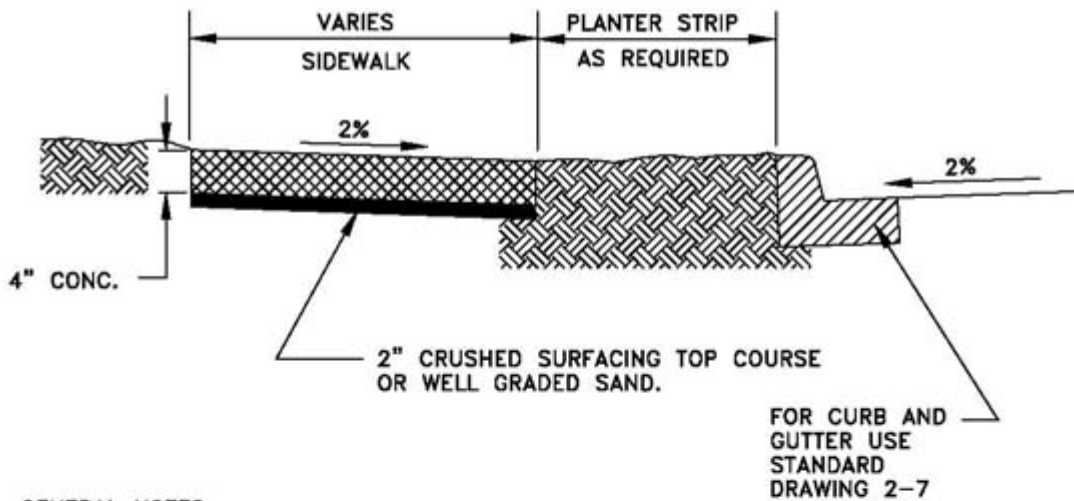
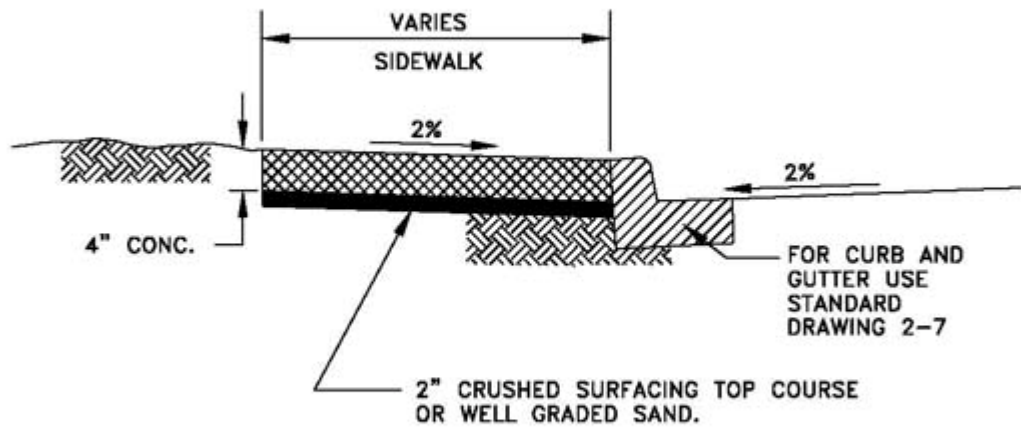
**GENERAL NOTES:**

1. EXPANSION JOINT MATERIAL TO BE 3/8" THICK PREMOLDED JOINT FILLER FULL THICKNESS OF CONCRETE.
2. FORM AND SUBGRADE INSPECTION REQUIRED BEFORE POURING CONCRETE.
3. SUBGRADE AND BASE REQUIREMENTS SHALL BE THE SAME AS FOR PAVEMENT RESTORATION.

<i>City of Chehalis</i>	
<b>CEMENT CONCRETE CURB &amp; GUTTER</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-7
CITY ENGINEER	REVISED DATE
	1/02/2003

Drawing Not to Scale



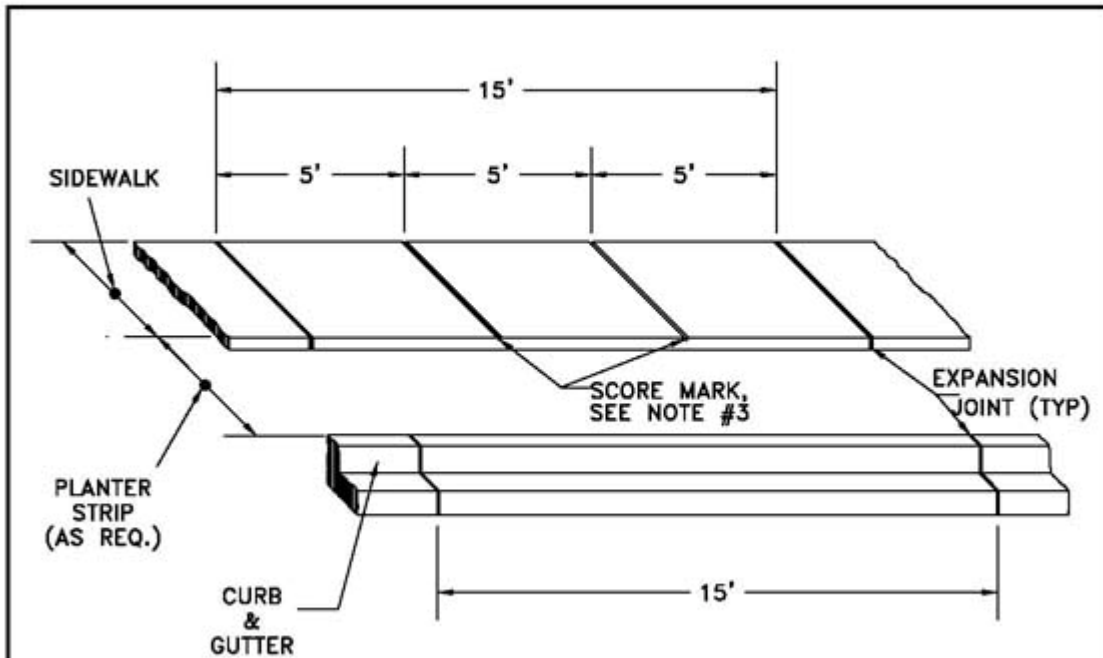


**GENERAL NOTES:**

1. REFER TO STANDARD DRAWING 2-10 FOR INFORMATION ON JOINTS AND SCORING.
2. SIDEWALK ACROSS CONCRETE DRIVEWAYS REQUIRE A MINIMUM DEPTH OF 6" FOR RESIDENTIAL DRIVES & 8" FOR ALL OTHER DRIVES.
3. WHEN CHECKED WITH A 10' STRAIGHTEDGE, GRADE SHALL NOT DEVIATE MORE THAN 1/8 INCH & ALIGNMENT SHALL NOT VARY MORE THAN 1/4 INCH.

Drawing Not to Scale

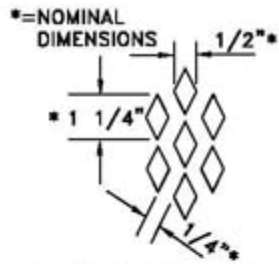
<i>City of Chehalis</i>	
<b>SIDEWALK</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-9
CITY ENGINEER	REVISED DATE
	1/02/2003



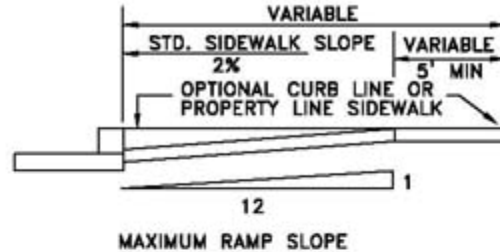
**GENERAL NOTES:**

1. EXPANSION JOINT MATERIAL TO BE 3/8" THICK PREMOLDED JOINT FILLER FULL THICKNESS OF CONCRETE.
2. FORM AND SUBGRADE INSPECTION REQUIRED BEFORE POURING CONCRETE.
3. SCORE MARKS SHALL BE  $\pm 1/8"$  WIDE BY  $\pm 1/4"$  DEEP. FOR SIDEWALKS OVER 8' IN WIDTH, A LONGITUDINAL SCORE MARK SHALL BE MADE ALONG CENTER OF WALK.
4. EXPANSION JOINTS SHALL BE INSTALLED IN CURB AND GUTTER AND IN SIDEWALK AT PC AND PT AT ALL CURB RETURNS. EXPANSION JOINTS SHALL BE PLACED IN SIDEWALK AT SAME LOCATIONS AS THOSE IN CURB AND GUTTER WHEN SIDEWALK IS ADJACENT TO CURB AND GUTTER, UNLESS OTHERWISE DIRECTED BY ENGINEER.

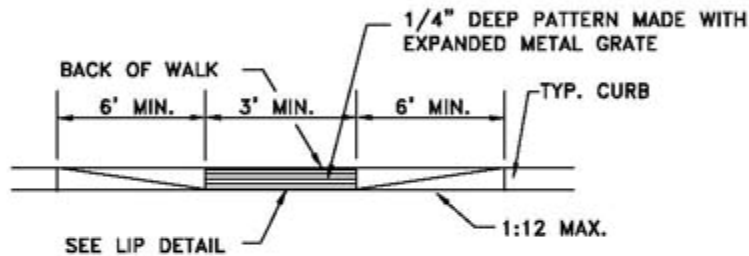
<i>City of Chehalis</i>	
<b>SIDEWALK SPACING</b> EXPANSION JOINTS & SCORE MARKS	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-10
CITY ENGINEER	REVISED DATE
	1/02/2003



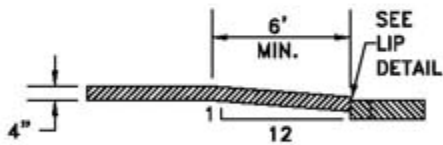
RAMP TEXTURE  
DETAIL



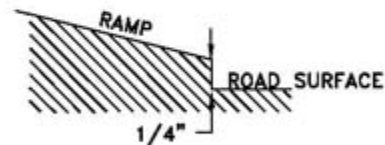
SECTION THROUGH RAMP  
ALL VIEWS



FRONT VIEW OF RAMP



RAMP SIDE VIEW



LIP DETAIL

NOTES:

1. MINIMUM RAMP LENGTH IS SIX FEET (6').  
MINIMUM RAMP WIDTH IS THREE FEET (3').
2. SEE SIDEWALK DETAIL FOR THICKNESS  
EXPANSION JOINTS, & SCORE MARKS.

Drawing Not to Scale

*City of Chehalis*

**CURB RAMP  
CONSTRUCTION DETAILS**

APPROVED BY

*James R Nichols*

CITY ENGINEER

DWG. NO.

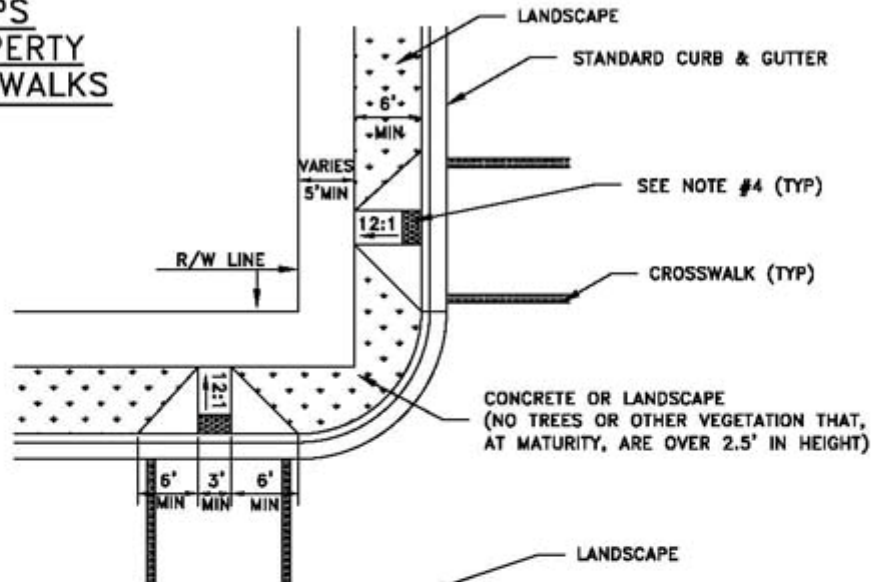
2-11

REVISED DATE

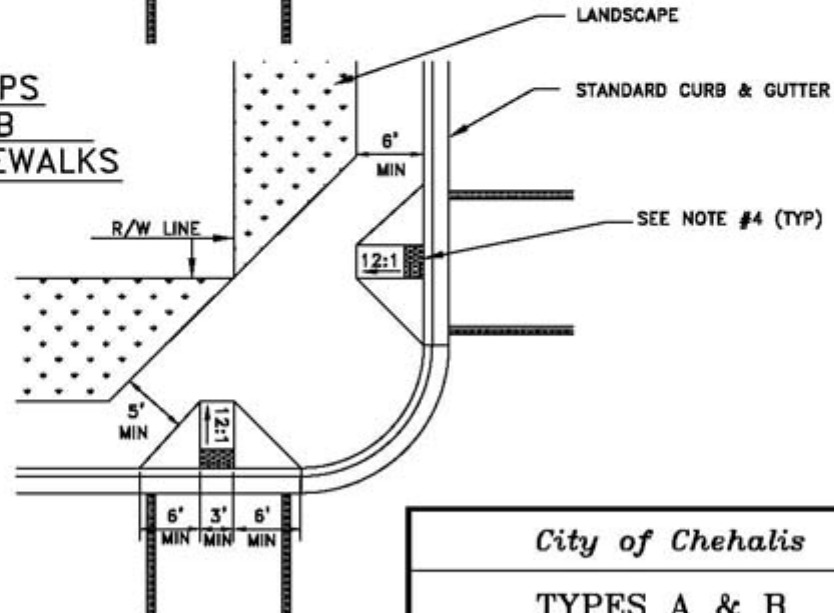
1/02/2003



**TYPE A  
END RAMPS  
FOR PROPERTY  
LINE SIDEWALKS**

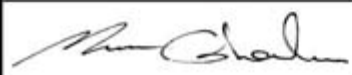


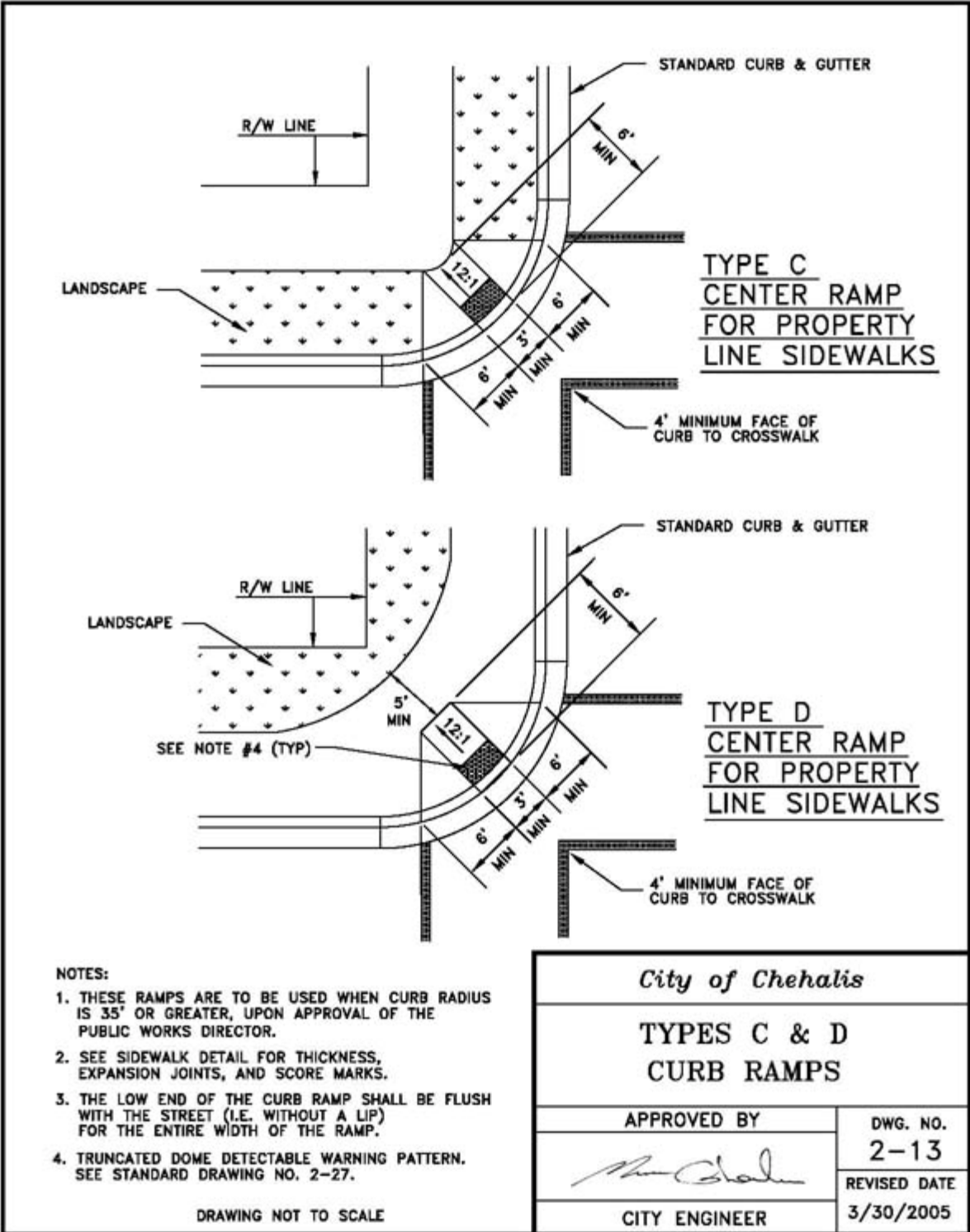
**TYPE B  
END RAMPS  
FOR CURB  
LINE SIDEWALKS**

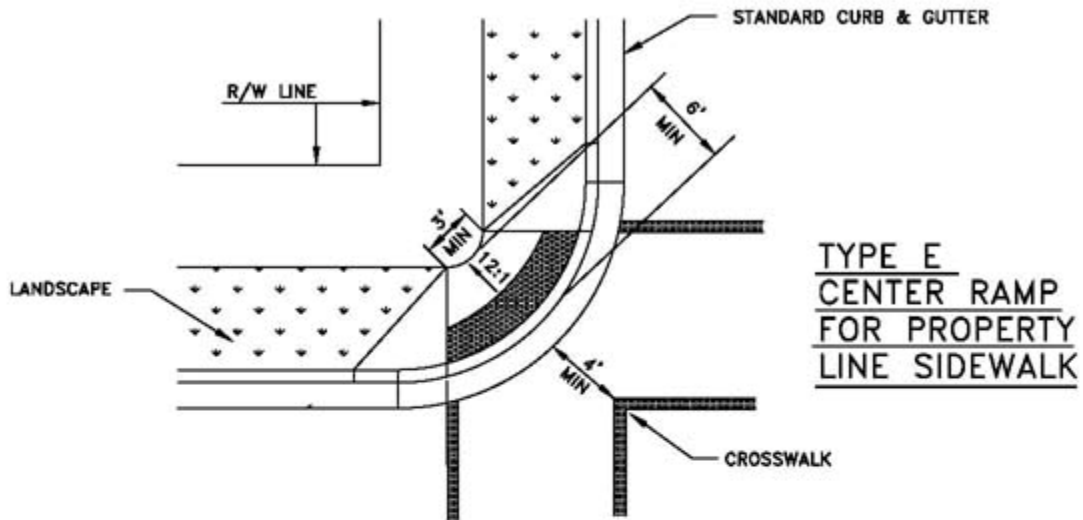


**NOTES:**

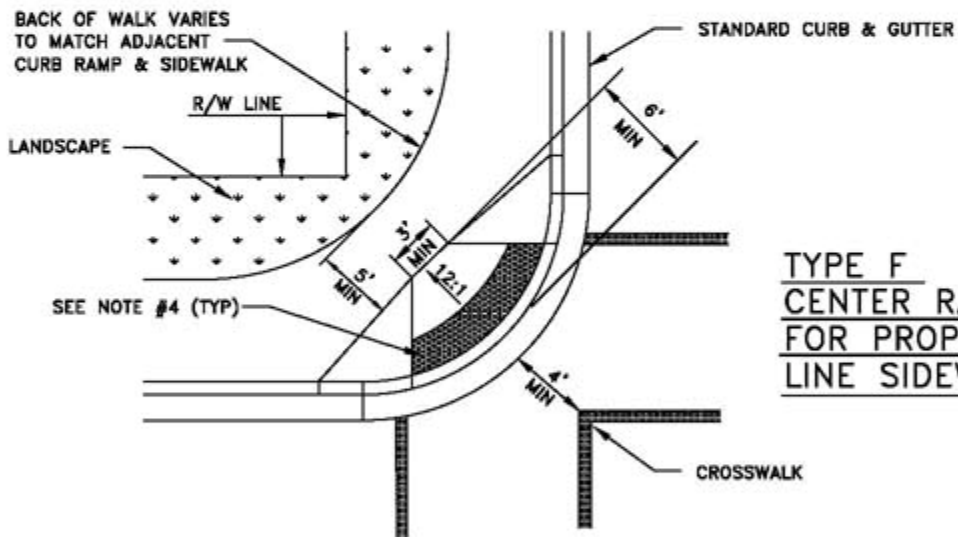
1. SEE SIDEWALK DETAIL FOR THICKNESS, EXPANSION JOINTS, AND SCORE MARKS.
2. CROSSWALKS SHALL BE CENTERED ON CURB ACCESS RAMPS.
3. THE LOW END OF THE CURB RAMP SHALL BE FLUSH WITH THE STREET (I.E. WITHOUT A LIP) FOR THE ENTIRE WIDTH OF THE RAMP.
4. TRUNCATED DOME DETECTABLE WARNING PATTERN. SEE STANDARD DRAWING NO. 2-27.

<i>City of Chehalis</i>	
<b>TYPES A &amp; B CURB RAMPS</b>	
APPROVED BY	DWG. NO.
	2-12
CITY ENGINEER	REVISED DATE
	3/30/2005





TYPE E  
CENTER RAMP  
FOR PROPERTY  
LINE SIDEWALK




TYPE F  
CENTER RAMP  
FOR PROPERTY  
LINE SIDEWALK

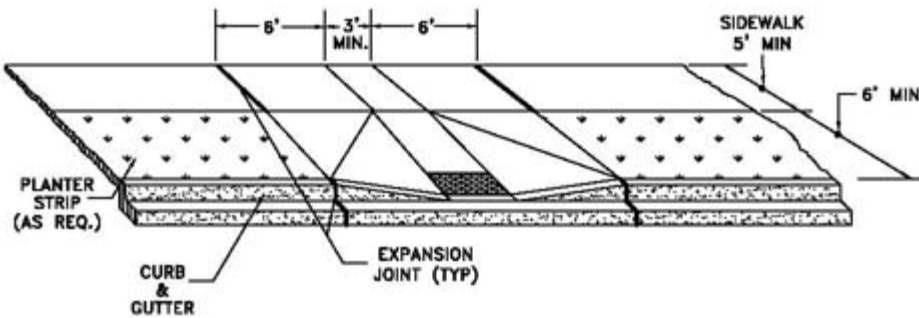
**NOTES:**

1. THESE RAMPS ARE TO BE USED WHEN CURB RADIUS IS 35' OR GREATER, UPON APPROVAL OF THE PUBLIC WORKS DIRECTOR.
2. SEE SIDEWALK DETAIL FOR THICKNESS, EXPANSION JOINTS, AND SCORE MARKS.
3. THE LOW END OF THE CURB RAMP SHALL BE FLUSH WITH THE STREET (I.E. WITHOUT A LIP) FOR THE ENTIRE WIDTH OF THE RAMP.
4. TRUNCATED DOME DETECTABLE WARNING PATTERN. SEE STANDARD DRAWING NO. 2-27.

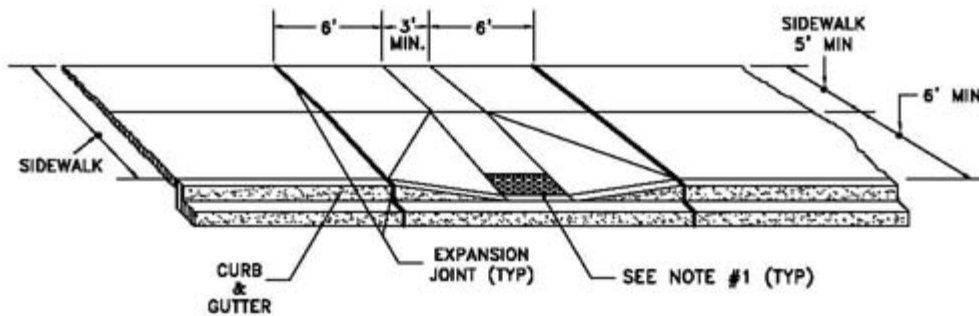
DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>TYPES E &amp; F CURB RAMPS</b>	
APPROVED BY	DWG. NO.
	2-14
CITY ENGINEER	REVISED DATE
	3/30/2005





FOR PROPERTY LINE SIDEWALK




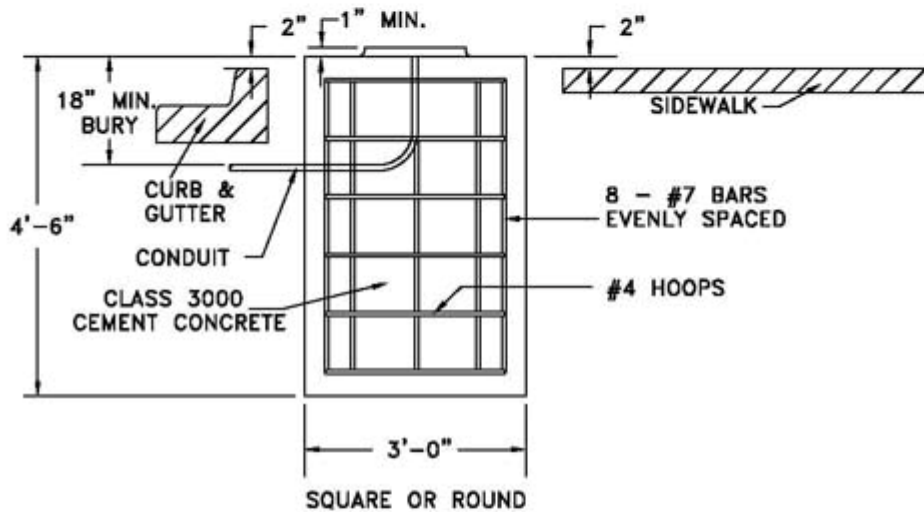
FOR CURB LINE SIDEWALK

**NOTE:**

1. TRUNCATED DOME DETECTABLE WARNING PATTERN. SEE STANDARD DRAWING NO. 2-27.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>MID-BLOCK CURB RAMPS</b>	
APPROVED BY	DWG. NO.
	<b>2-15</b>
CITY ENGINEER	REVISED DATE
	<b>3/30/2005</b>

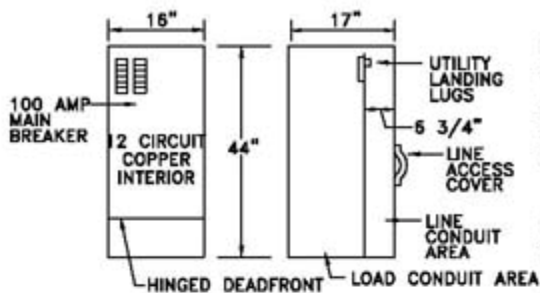


**GENERAL NOTES:**

1. ALL REINFORCING STEEL SHALL HAVE 2-1/2" CLEAR COVER OF CONCRETE.
2. PROVIDE WATER TIGHT GROUT JOINT BETWEEN BASE OF POLE AND CONCRETE.
3. PROVIDE 3/8" EXPANSION JOINT WHEN PLACED IN A SIDEWALK AREA.
4. ANCHOR BOLTS & BOLT CIRCLE TO MEET MANUFACTURER SPECIFICATIONS. SET BOLT HEIGHT TO PERMIT DOUBLE LOCKNUT FOR ADJUSTMENT.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>LUMINAIRE FOUNDATION</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-16
CITY ENGINEER	REVISED DATE
	1/02/2003



MILBANK CP3B-11115AALSP2  
OR APPROVED EQUAL

THE UNIT SHALL CONTAIN THE FOLLOWING  
ADDITIONAL EQUIPMENT:

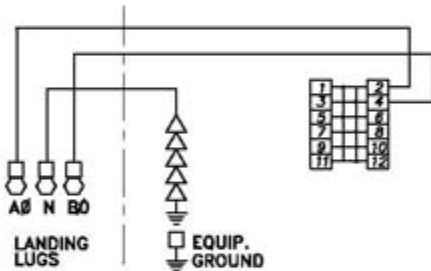
- TWO MERCURY RELAYS
- ONE 3 POSITION TEST SWITCH
- ONE PHOTOCELL

THE UNIT SHALL BE SET UP TO ACCEPT:  
ONE TIME CLOCK

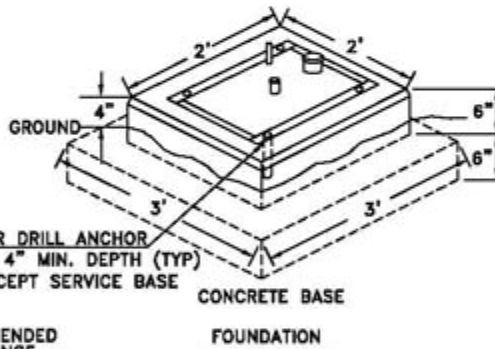
- SPECIFICATIONS**
1. STANDARD VOLTAGE IS 120/240V 10/3W
  2. CALTRANS TYPE 3B SERVICE OR U.L. APPROVED EQUAL.
  3. TYPE 3R RAINPROOF ENCLOSURE
  4. ALUMINUM ANODIZED CONSTRUCTION.
  5. INTERIORS WILL ACCEPT PLUG-IN BREAKERS (BRYANT, G.E., WESTINGHOUSE, ITE, CROUSE-HINDS)
  6. DETACHABLE PADMOUNT SUB-BASE
  7. COPPER BUSSED INTERIOR HAS PROVISIONS FOR TWELVE FULL ONE-INCH POLES.
  8. SUITABLE FOR USE WITHOUT A MAIN WHEN NO MORE THAN SIX SERVICE DISCONNECTS ARE INSTALLED AND USED IN ACCORDANCE WITH ARTICLE 384 OF THE NEC.
  9. SEAL SERVICE TO CONCRETE FOUNDATION WITH SILICONE.



PADMOUNT BASE BEFORE INSTALLATION  
ON OR IN CONCRETE FOUNDATION



WIRING DIAGRAM



SET OR DRILL ANCHOR  
BOLTS 4" MIN. DEPTH (TYP)  
TO ACCEPT SERVICE BASE

CONCRETE BASE  
FOUNDATION



SERVICE TERM.  
SECTION

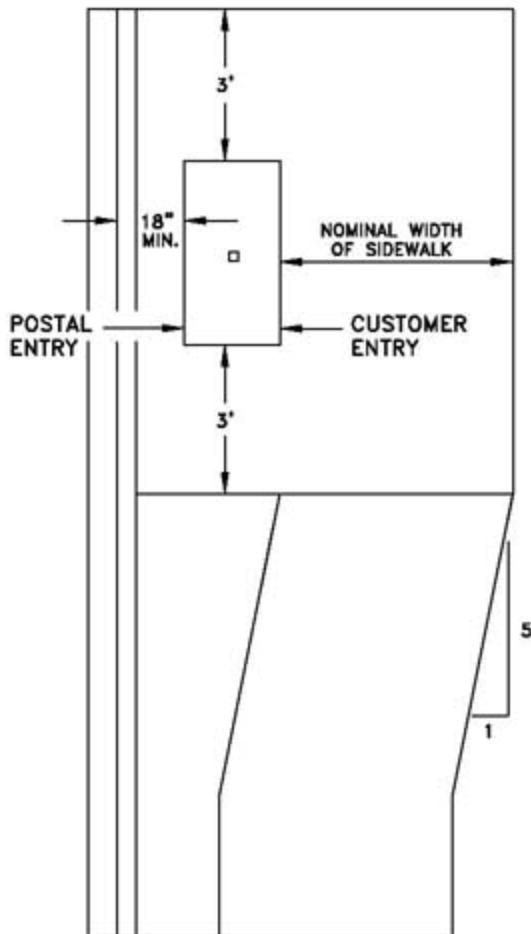
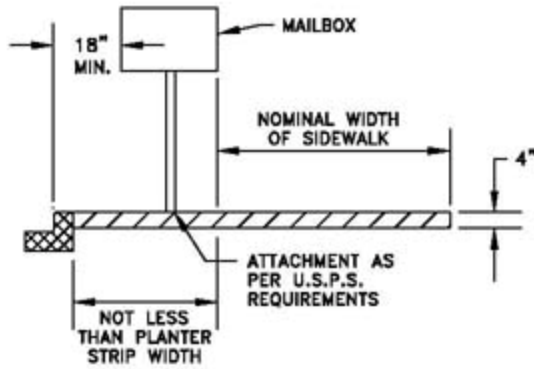
CUSTOMER  
SECTION

GROUND ROD

FLOOR PLAN

Drawing Not to Scale

<i>City of Chehalis</i>	
<b>SERVICE DISCONNECT FOR STREET LIGHTS &amp; TRAFFIC SIGNALS</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-17
CITY ENGINEER	REVISED DATE
	1/02/2003

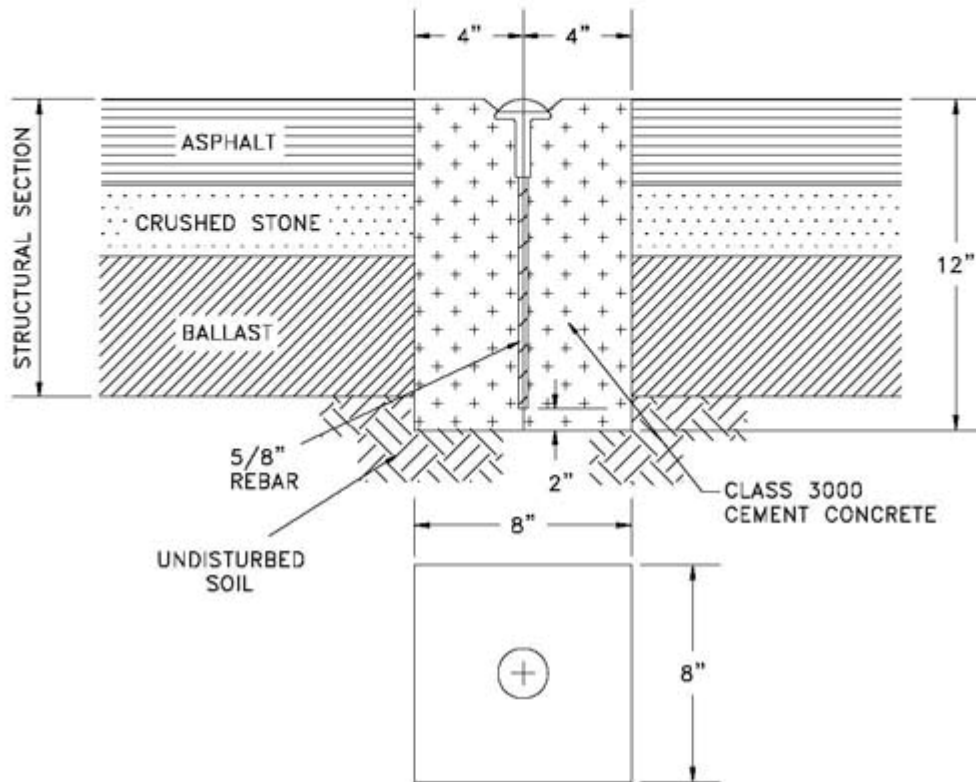


Drawing Not to Scale

GENERAL NOTES:

1. SEE SECTION 2G.06 FOR ADDITIONAL REQUIREMENTS.
2. LOCATE SO AS NOT TO CREATE AN INTERSECTION SITE DISTANCE OBSTRUCTION.

<i>City of Chehalis</i>	
<b>MAIL BOX CLUSTER</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-18
CITY ENGINEER	REVISED DATE
	1/02/2003

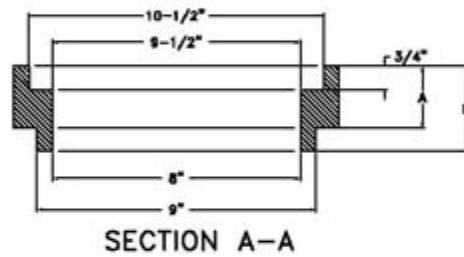
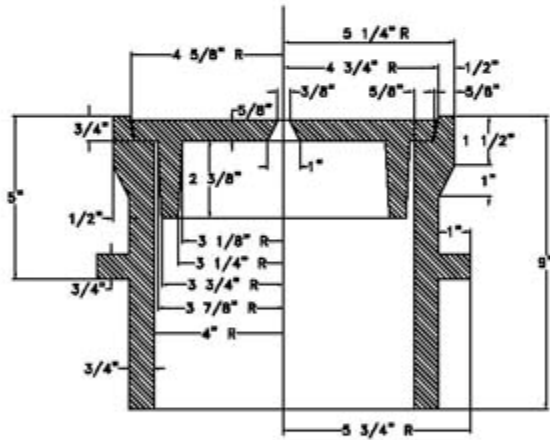
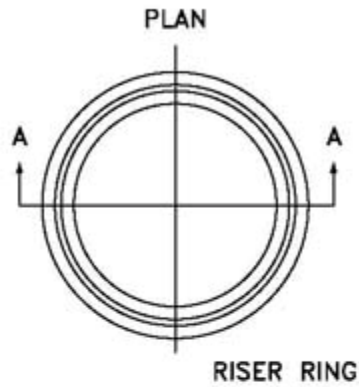
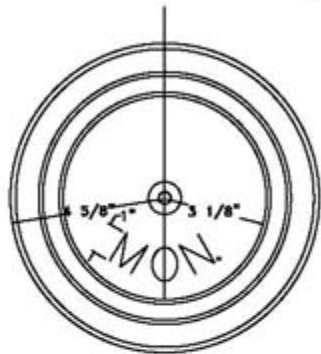
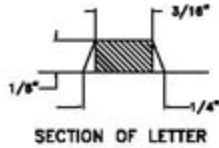


GENERAL NOTES:

1. THIS MONUMENT TO BE USED PRIMARILY ON BITUMINOUS OR ASPHALT CONCRETE PAVEMENT FOR USE PRIMARILY IN SUBDIVISIONS AND MINOR ARTERIALS.
2. CONCRETE BASE DIMENSIONS SHOWN ARE MINIMUM. CONCRETE BASE NEED NOT BE FORMED.
3. CAP SHALL BE "BERNTSEN RB SERIES" OR 2" BRASS PLUG MARKER. (FLAT OR DOMED)
4. CONCRETE TO BE PLACED ON A FIRM AND UNYIELDING FOUNDATION.

Drawing Not to Scale

<i>City of Chehalis</i>	
<b>CAST IN PLACE MONUMENT</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-19
CITY ENGINEER	REVISED DATE
	1/02/2003



RISER SIZE			
DIM	1-1/2"	2"	3"
A	1-1/2"	2"	3"
B	2-1/4"	2-3/4"	3-3/4"

NOTES:  
 THE CASTINGS SHALL BE GRAY-IRON CASTINGS, ASTM DESIGNATION A 48, CLASS 40. THE COVER AND SEAT SHALL BE MACHINED SO AS TO HAVE PERFECT CONTACT AROUND THE ENTIRE CIRCUMFERENCE AND FULL WIDTH OF BEARING SURFACE.  
 WHEN THE MONUMENT CASE AND COVER ARE PLACED IN CEMENT CONCRETE PAVEMENT THE CONCRETE BASE WILL BE NECESSARY.

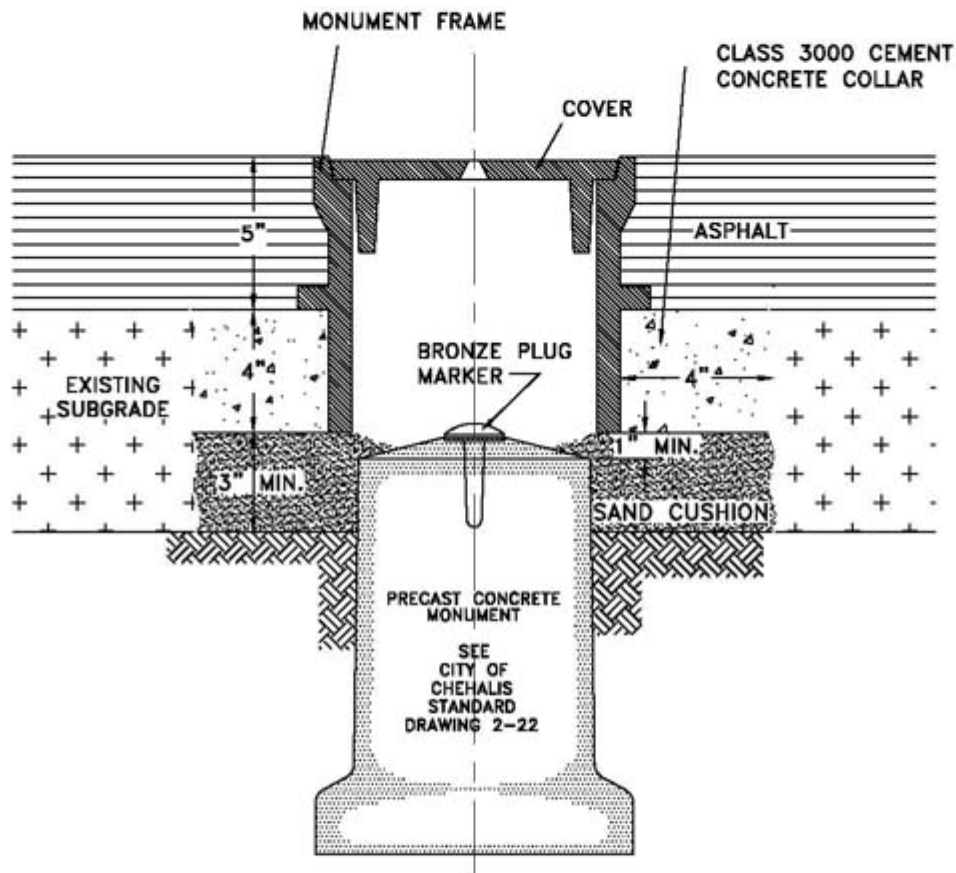
Drawing Not to Scale

*City of Chehalis*

**MONUMENT CASE AND COVER WITH RISER**

APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-20
CITY ENGINEER	REVISED DATE
	1/02/2003

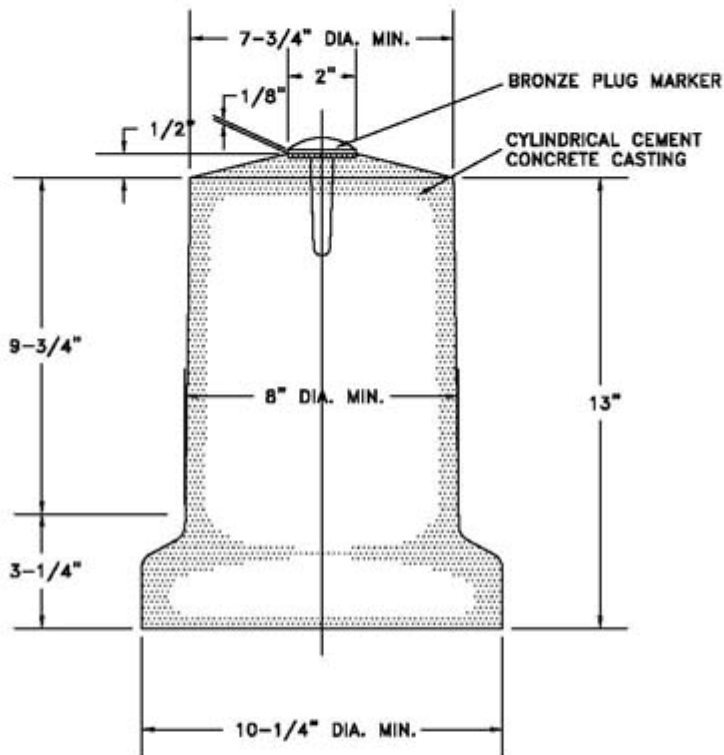




NOTE:  
 FOR USE PRIMARILY ON  
 ARTERIAL STREETS, STREETS  
 WITH BUS TRAFFIC AND  
 TRUCK ROUTES.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>MONUMENT CASE INSTALLATION</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-21
CITY ENGINEER	REVISED DATE
	1/02/2003



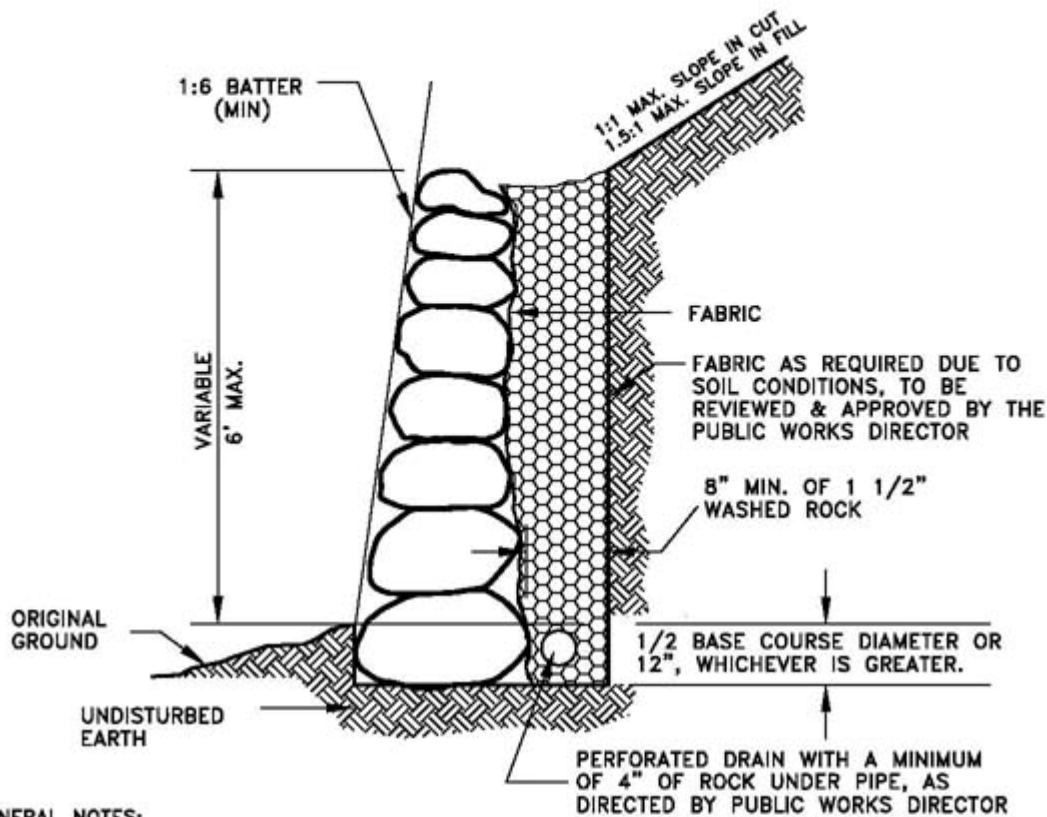
**GENERAL NOTES:**

1. MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE CASTING AT 28 DAYS - 3000#.
2. MAXIMUM AGGREGATE SIZE TO BE 1".

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>PRECAST CONCRETE MONUMENT</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	2-22
CITY ENGINEER	REVISED DATE
	1/02/2003





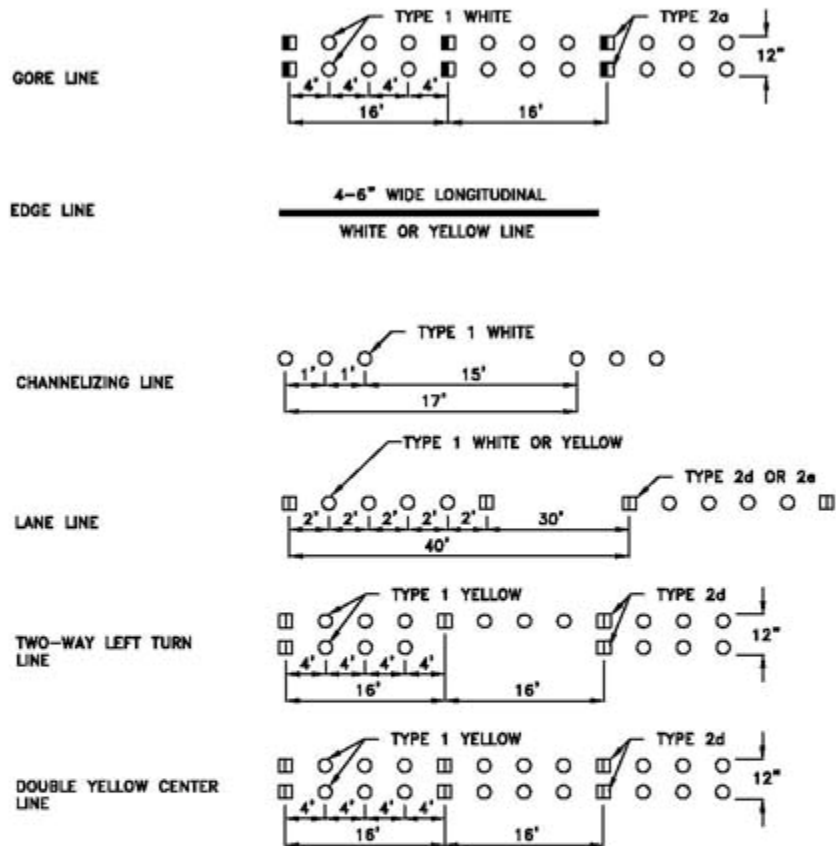
**GENERAL NOTES:**

1. Rockeries higher than 5' shall be constructed of rocks of graduated sizes from 5-man to 2-man from bottom to top. Rockeries of 5' or lower shall be constructed of 3-man to 2-man from bottom to top. Rock size categories shall include:  
 Two-man rocks (300 to 600 pounds),  
 13 inches in least dimension;  
 Three-man rocks (800 to 1200 pounds),  
 16 inches in least dimension;  
 Four-man rocks (1500 to 2200 pounds),  
 18 inches in least dimension;  
 Five-man rocks (2400 to 3400 pounds),  
 24 inches in least dimension.
2. The rockery shall be installed with a smooth face.
3. The long dimension of the rocks shall be oriented towards the bank to provide maximum stability.
4. The rock shall be placed so as to lock into two rocks in the lower tier.
5. Call for inspection prior to base course being placed (for verification of rockery height, foundation material, and rock size).
6. Design varying from those indicated shall carry the seal of a Professional Engineer licensed in the State of Washington, experienced in soil mechanics.

Drawing Not to Scale

<i>City of Chehalis</i>	
<b>RETAINING WALL</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	<b>2-23</b>
CITY ENGINEER	REVISED DATE
	1/02/2003

PAVEMENT MARKING DETAILS



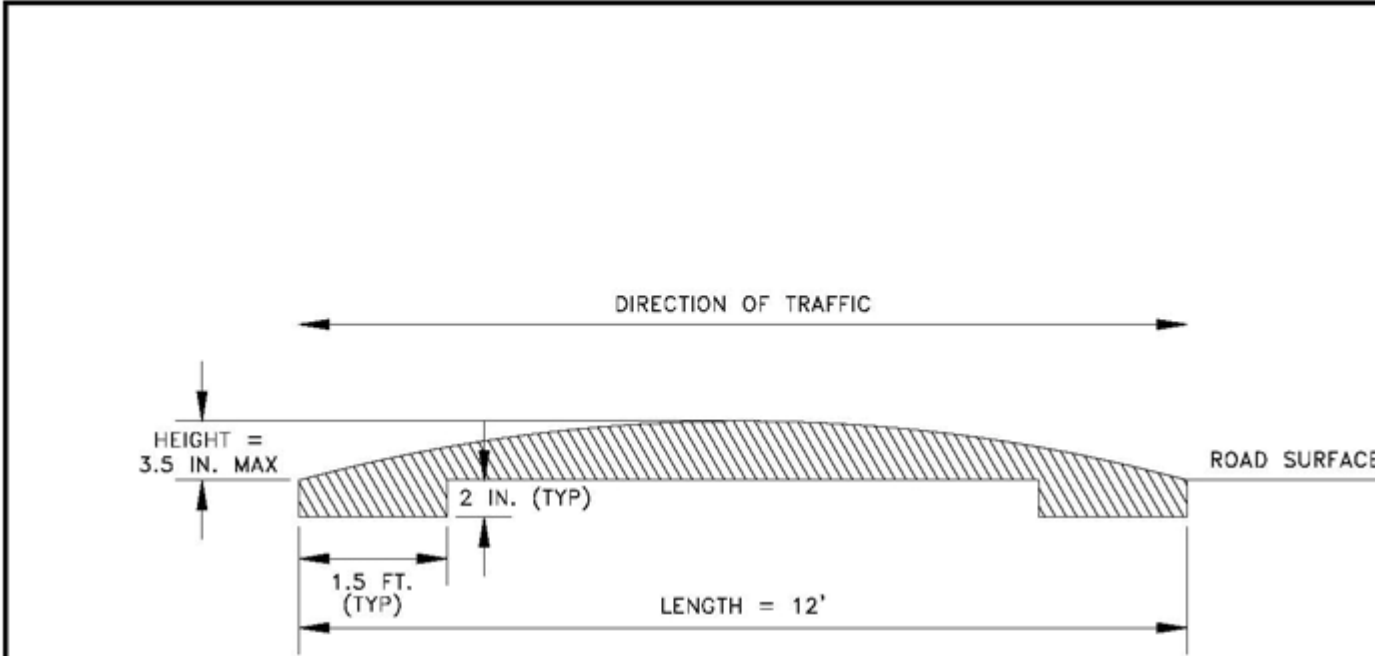
LANE MARKERS

- TYPE 1 LANE MARKERS, WHITE OR YELLOW
- TYPE 2a REFLECTIVE LANE MARKER, WHITE AND RED
- TYPE 2d REFLECTIVE LANE MARKER, YELLOW AND YELLOW
- ▣ TYPE 2e REFLECTIVE LANE MARKER, WHITE-ONE SIDE ONLY

NOTE: ALL PAVEMENT LINE MARKINGS SHALL BE "DURASTRIPE", OR APPROVED EQUAL.

Drawing Not to Scale

<i>City of Chehalis</i>	
<b>STRIPING DETAIL</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	<b>2-24</b>
CITY ENGINEER	REVISED DATE
	1/02/2003

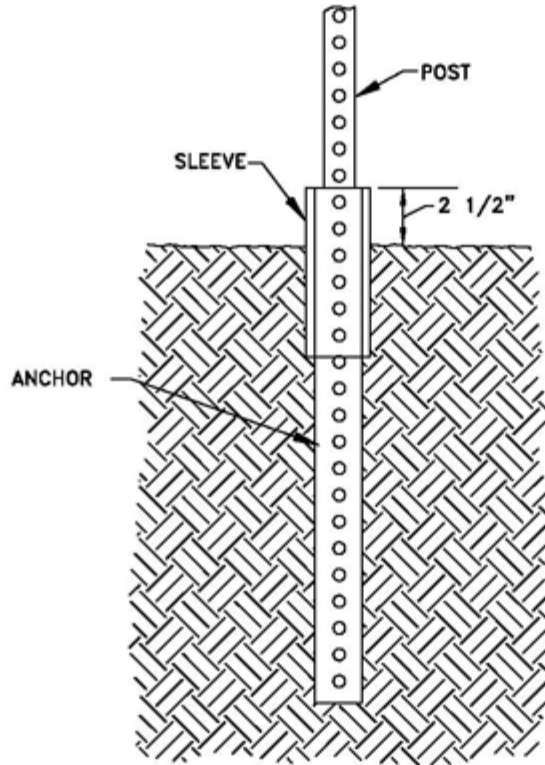


NOTE:  
BERM SHALL MAKE GRADUAL TRANSITION  
TO AND FROM POINT OF MAXIMUM HEIGHT.

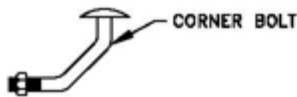
Drawing Not to Scale

<i>City of Chehalis</i>	
<b>SPEED BERM CROSS SECTION</b>	
APPROVED BY	D 2
<i>James R Nichols</i>	REVIS
CITY ENGINEER	1/0

2 PIECE BREAKAWAY ANCHOR



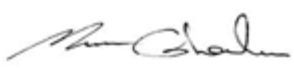
	SIZE	THICKNESS	LENGTH
POST	2"	14 gauge	as required
ANCHOR	2-1/4"	12 gauge	36"
SLEEVE	2-1/2"	12 gauge	12"

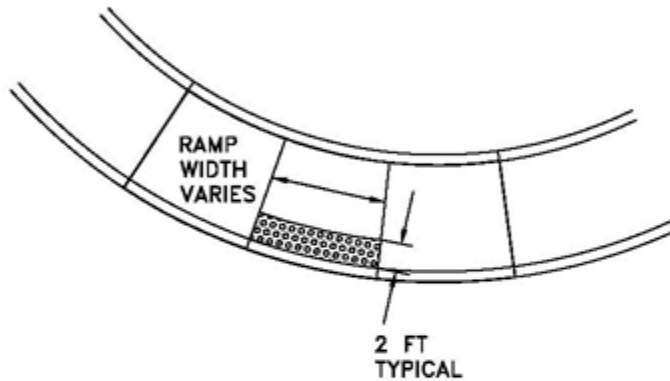
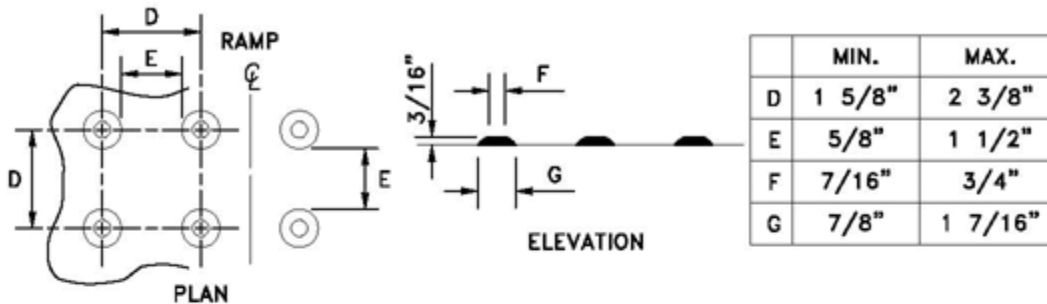


**NOTES:**

1. SIGN PLACEMENT LOCATIONS MUST BE APPROVED BY THE PUBLIC WORKS DEPARTMENT.
2. SIGNS ARE TO BE MOUNTED USING 3/8" ALUMINUM DRIVE RIVETS.
3. POSTS ARE TO BE INSTALLED USING 5/16" CORNER BOLTS (shown above).
4. POSTS, SLEEVES, AND ANCHORS ARE TO BE CONSTRUCTED OF PERFORATED, PRE-PUNCHED GALVANIZED SQUARE TUBE.

Drawing Not to Scale

<i>City of Chehalis</i>	
<b>STEEL SIGN POST BASE CONNECTION</b>	
APPROVED BY	DWG. NO.
	2-26
CITY ENGINEER	REVISED DATE
	3/02/2005




**TRUNCATED DOMES  
DETECTABLE WARNING  
PATTERN DETAIL**  
(SEE WSDOT STANDARD PLAN F-3b)

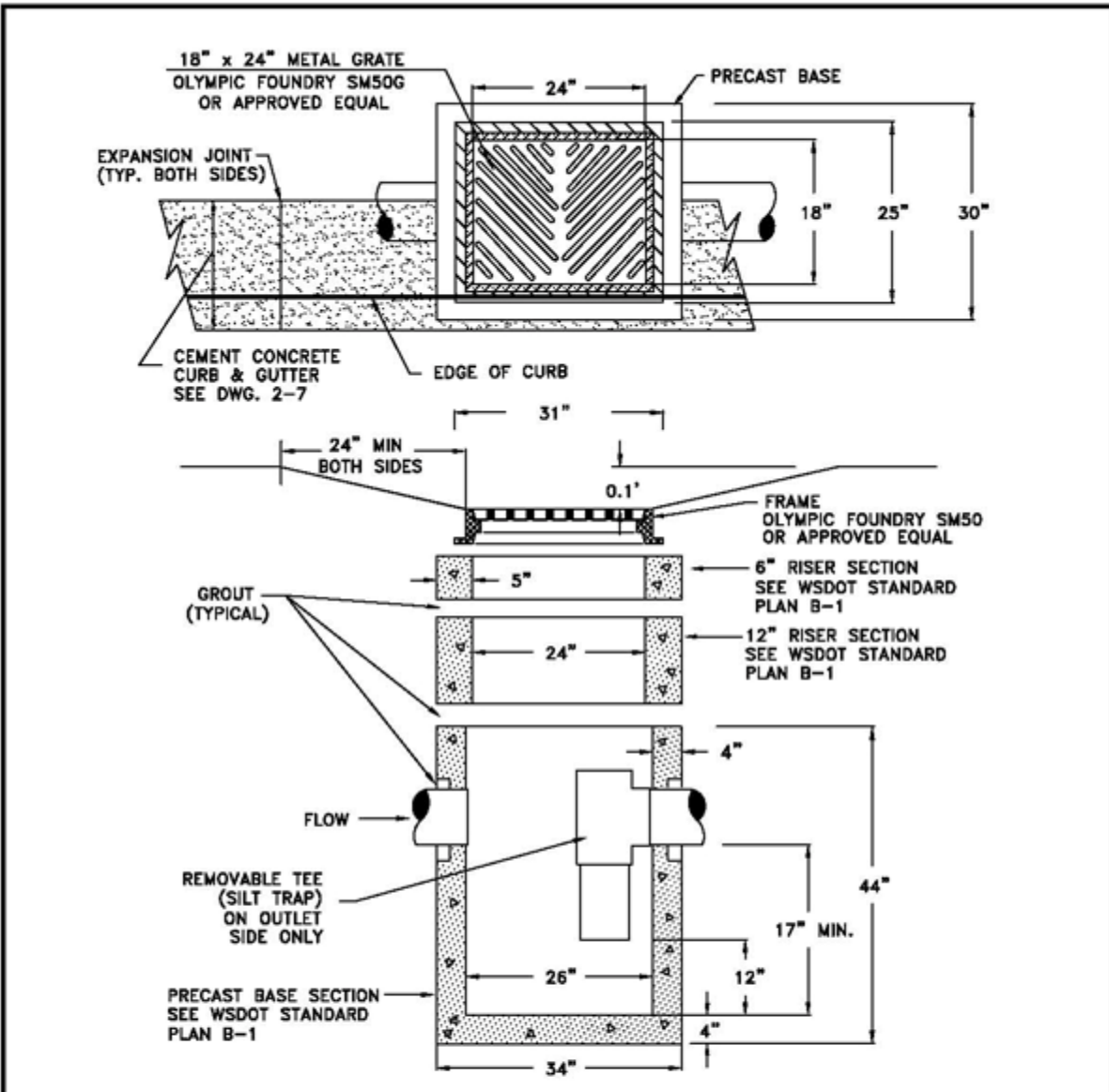
**NOTES:**

1. DETECTABLE WARNING PATTERNS SHALL BE "NEXTSTEP" OR APPROVED EQUAL THAT WILL ACHIEVE THE TRUNCATED DOME DIMENSIONS AND SPACING SHOWN. THE DETECTABLE WARNING PATTERN AREA SHALL BE YELLOW, IN COMPLIANCE WITH WSDOT STANDARD SPECIFICATION 8-14.3(3).

2. THE COLOR CONTRAST SHALL MEET THE FEDERAL REQUIREMENTS AS DEFINED BY THE FOLLOWING: DETECTABLE WARNINGS ON WALKING SURFACES. THE MATERIAL USED TO PROVIDE CONTRAST SHOULD CONTRAST BY AT LEAST 70%. CONTRAST IN PERCENT IS DETERMINED BY :  
 $CONTRAST = ((A-B)/A)*100$   
 A= LIGHT REFLECTANCE VALUE OF THE LIGHTER AREA AND  
 B=LIGHT REFLECTANCE VALUE OF THE DARKER AREA.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>TRUNCATED DOMES</b>	
APPROVED BY	DWG. NO.
	2-27
CITY ENGINEER	REVISED DATE
	3/30/2005



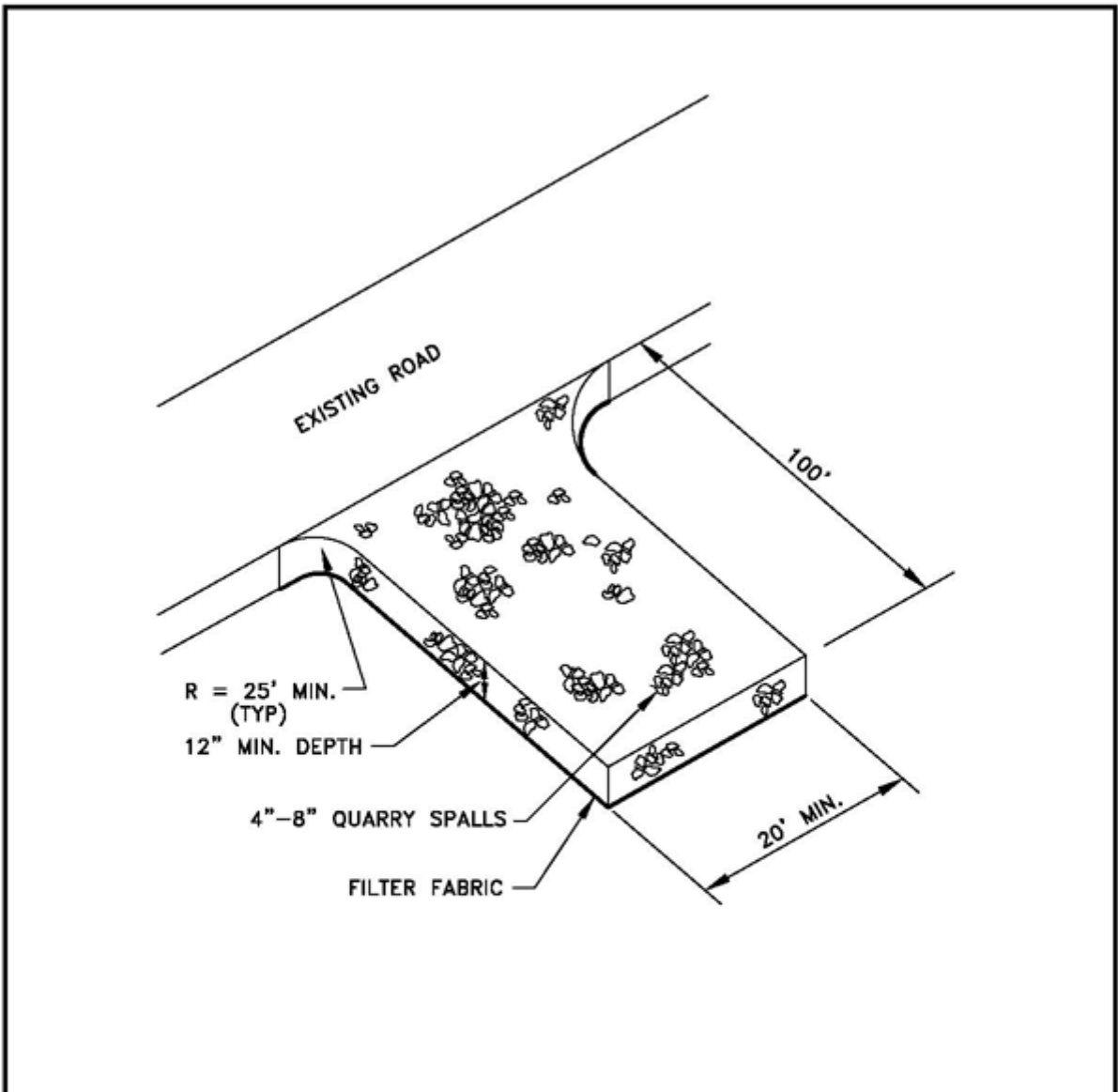
**NOTES:**

1. CATCH BASIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATIONS IN WSDOT STANDARD PLAN B-1.
2. OLYMPIC FOUNDRY GRATES SM50VG OR SM50S (OR APPROVED EQUAL), MAY BE REQUIRED WHEN CONDITIONS WARRANT, AS DETERMINED BY THE PUBLIC WORKS DIRECTOR.

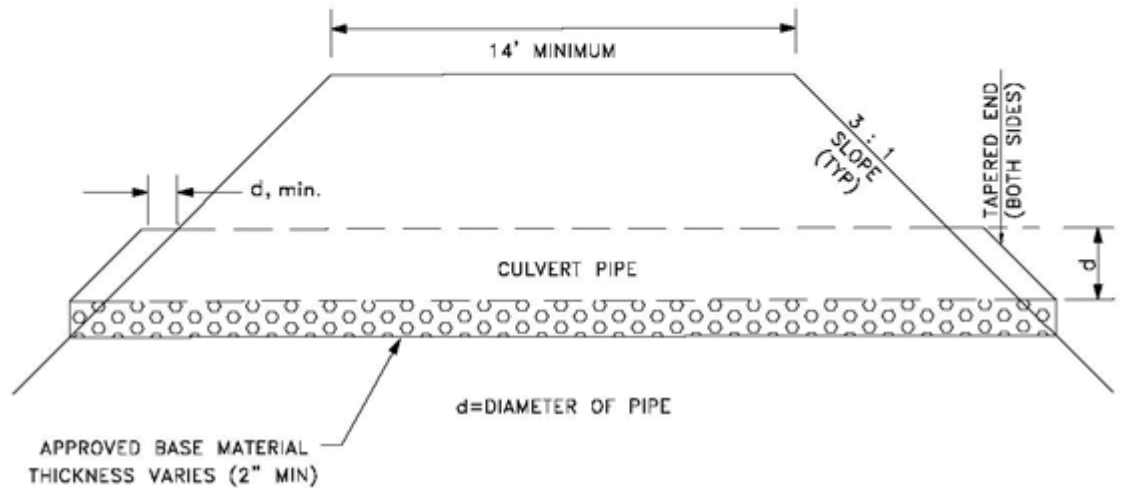
Drawing Not to Scale

<i>City of Chehalis</i>	
<b>CATCH BASIN WITH SILT TRAP TEE</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	3-1
CITY ENGINEER	REVISED DATE
	1/02/2003





<i>City of Chehalis</i>	
<b>STABILIZED CONSTRUCTION ENTRANCE</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	3-2
CITY ENGINEER	REVISED DATE
	1/02/2003



NOTES:

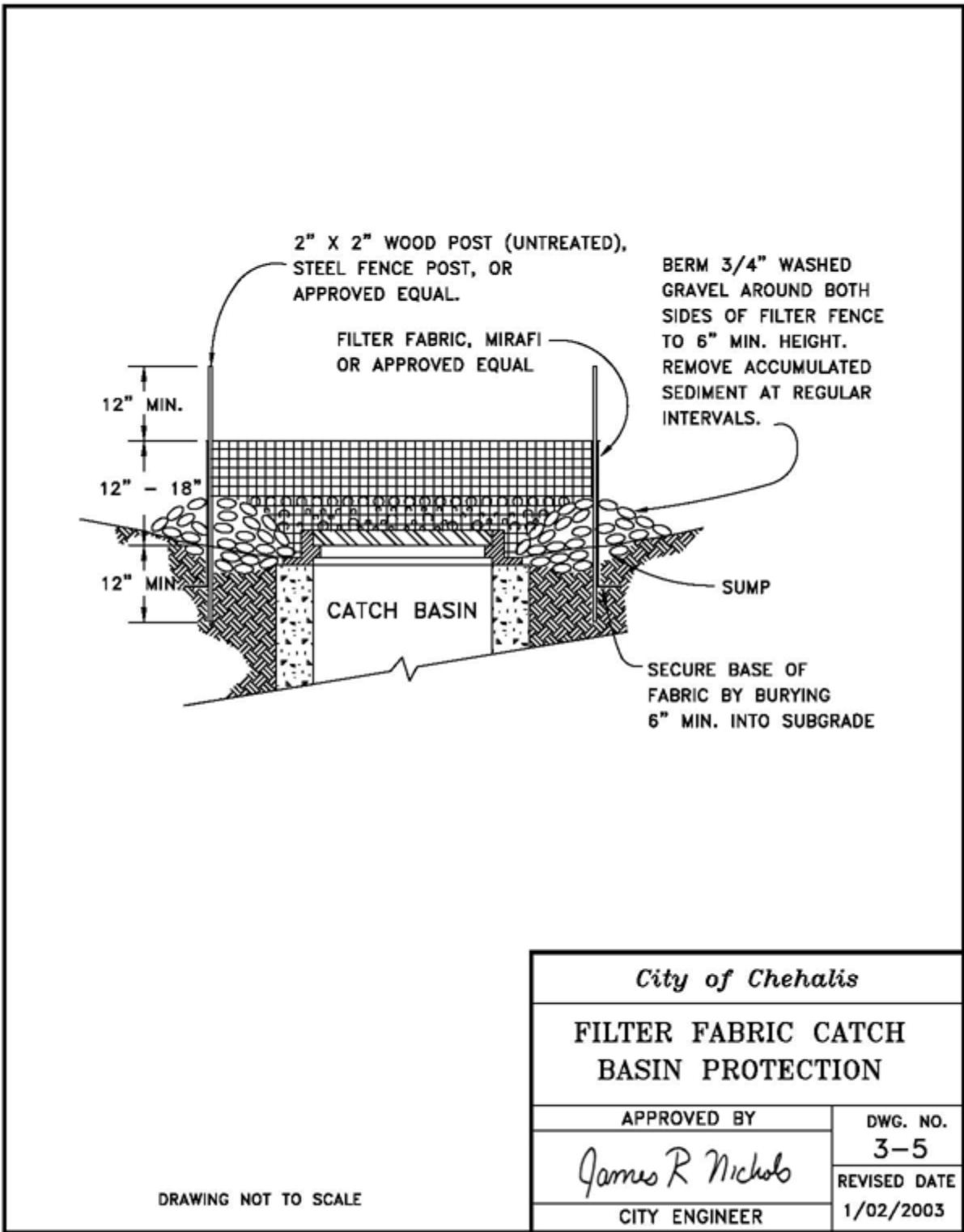
1. IF CULVERT IS BEING CONNECTED TO AN EXISTING CLOSED CONVEYANCE SYSTEM, CULVERT MATERIAL & METHOD OF CONNECTION MUST BE APPROVED BY THE PUBLIC WORKS DEPARTMENT.
2. SEE SECTION 3A.03 FOR INFORMATION REGARDING PIPE TYPE AND SIZING.
3. IF CONDITIONS WARRANT, ARMORING OF CULVERT ENDS WITH RIP RAP MAY BE REQUIRED BY CITY TO MAINTAIN SLOPE STABILITY.

Drawing Not to Scale

<i>City of Chehalis</i>	
<b>DRIVEWAY CULVERT</b>	
APPROVED BY	D
<i>James R Nichols</i>	REV
CITY ENGINEER	1/0

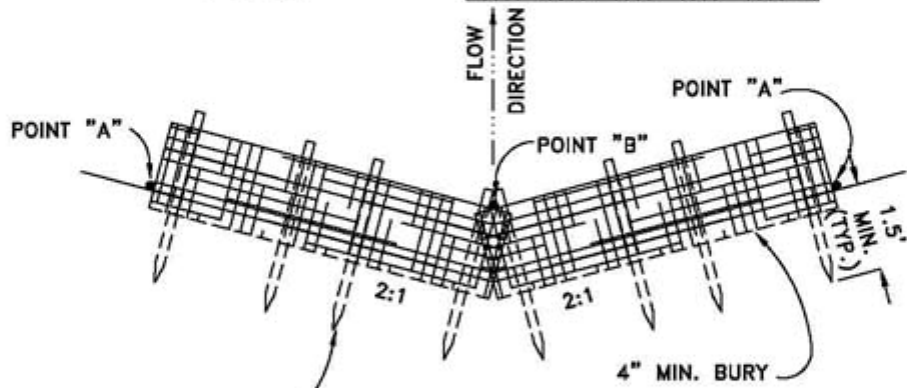
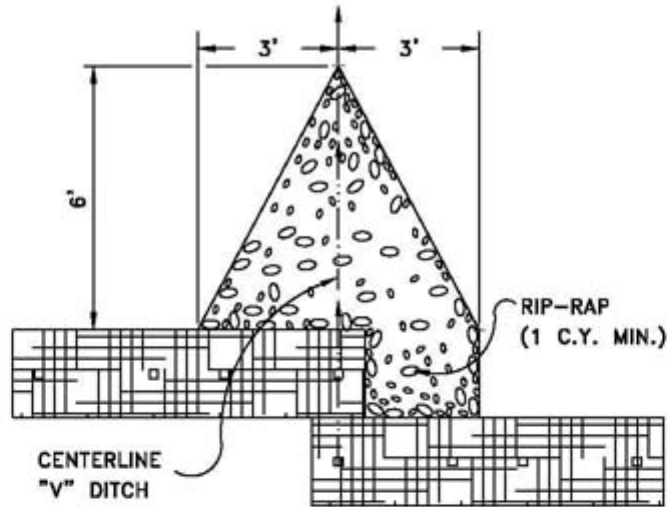






DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>FILTER FABRIC CATCH BASIN PROTECTION</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	3-5
CITY ENGINEER	REVISED DATE
	1/02/2003



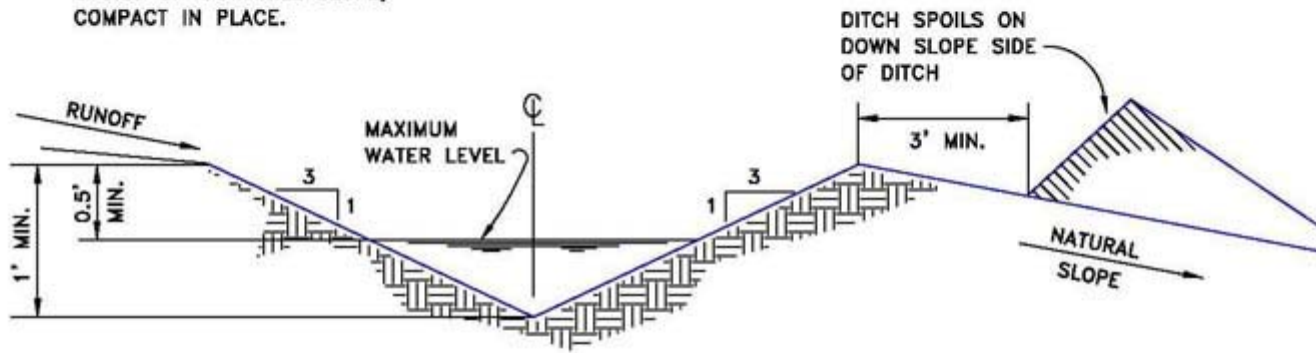
#4 REBAR OR 2" X 2"  
WOOD STAKES

NOTE: POINTS "A"  
MUST BE HIGHER  
THAN POINT "B"

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>TEMPORARY STRAWBALE CHECK DAM</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	<b>3-6</b>
CITY ENGINEER	REVISED DATE
	1/02/2003

PLACE V-DITCH EXCAVATION  
SPOILS ON DOWNHILL SLOPE,  
COMPACT IN PLACE.



DRAWING NOT TO SCALE

*City of Chehalis*

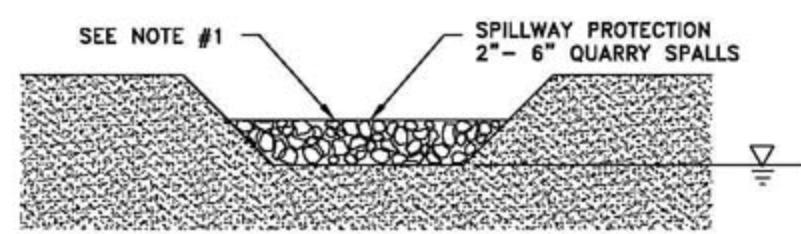
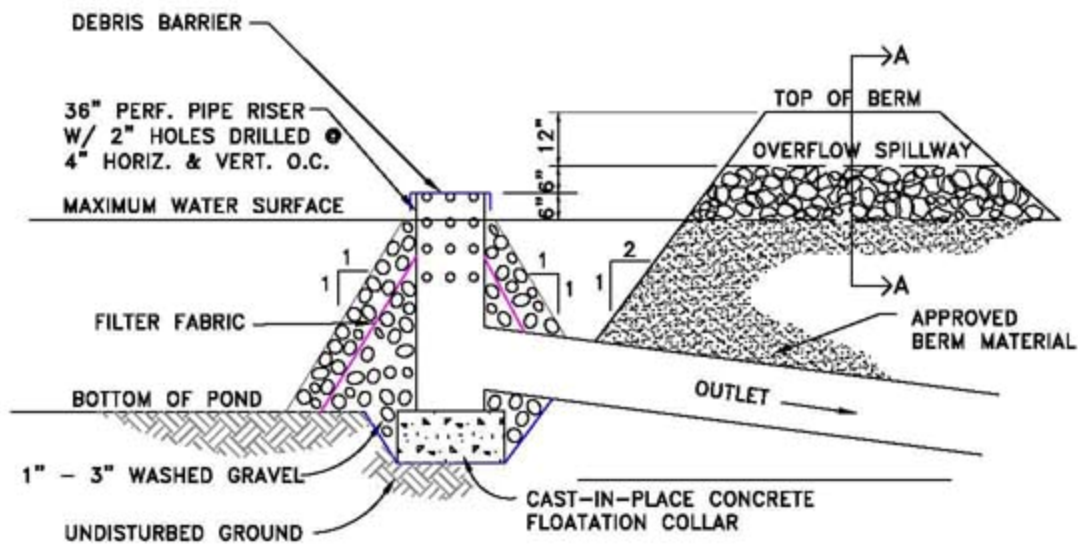
**TEMPORARY  
"V" DITCH**

APPROVED BY

*James R Nichols*

CITY ENGINEER

RE  
9/



SECTION A-A

NOTES:

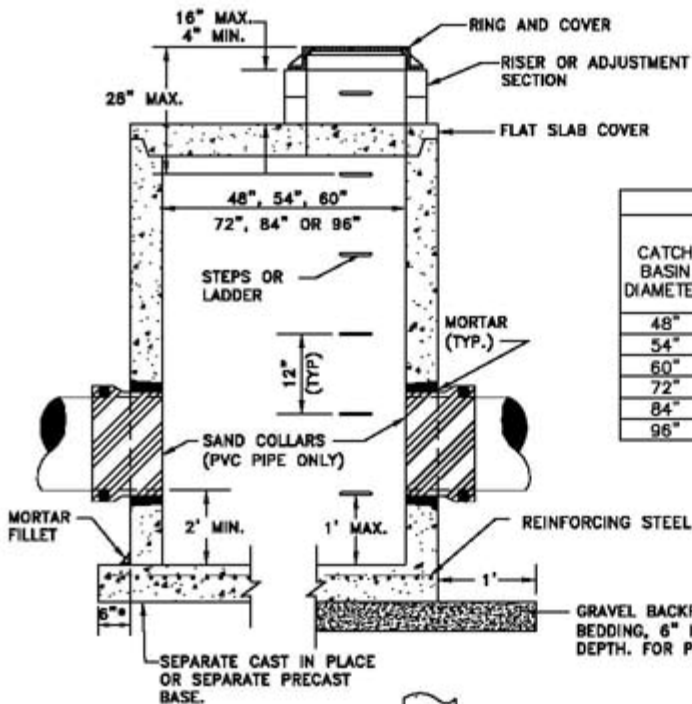
1. POND, OUTLET, & SPILLWAY DIMENSIONS TO BE DESIGNED BY AN ENGINEER LICENSED IN THE STATE OF WASHINGTON.
2. ALL DIMENSIONS SHOWN ON DETAIL ARE MINIMUMS.
3. OUTLET SIDE OF BERM TO BE ARMORED WITH QUARRY SPALLS FOR WIDTH OF SPILLWAY.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>GRAVEL CONE WITH RISER</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	3-8
CITY ENGINEER	REVISED DATE
	1/02/2003



CATCH BASIN DIMENSIONS						
CATCH BASIN DIAMETER	WALL THICKNESS	BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS	BASE REINFORCING STEEL in <sup>2</sup> /ft IN EACH DIRECTION	
					INTEGRAL	SEPARATE
48"	4"	6"	36"	8"	0.15	0.23
54"	4.5"	8"	42"	8"	0.19	0.19
60"	5"	8"	48"	8"	0.25	0.25
72"	6"	8"	60"	12"	0.24	0.35
84"	8"	12"	72"	12"	0.29	0.39
96"	8"	12"	84"	12"	0.29	0.39



CATCH BASIN DIAMETER	PIPE ALLOWANCES PIPE MATERIAL WITH MAXIMUM INSIDE DIAMETER			
	CONCRETE	ALL METAL	HDPE	SOLID WALL PVC
48"	24"	30"	24"	27"
54"	30"	36"	30"	27"
60"	36"	42"	36"	36"
72"	42"	54"	42"	36"
84"	54"	60"	54"	36"
96"	60"	72"	60"	36"

\* FOR SEPARATE CAST IN PLACE




PRECAST BASE JOINT DETAIL

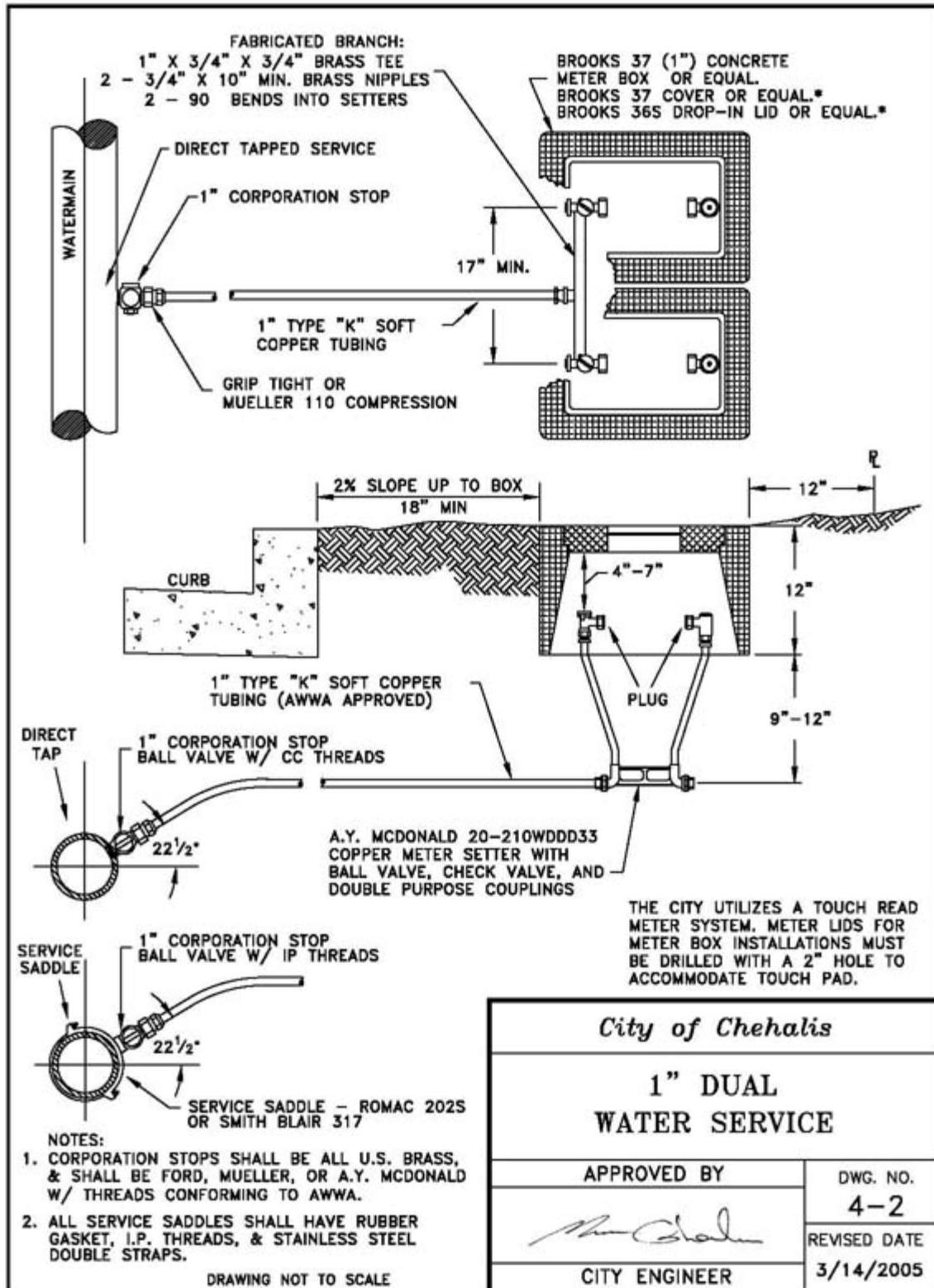
NOTES:

1. NO STEPS ARE REQUIRED WHEN THE HEIGHT IS 4' OR LESS.
2. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM TO 2.5" MAXIMUM. PROVIDE A 1.5" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR.
3. THE BOTTOM OF THE PRECAST BASIN MAY BE SLOPED TO FACILITATE CLEANING.
4. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.

Drawing Not to Scale

<i>City of Chehalis</i>	
<b>CATCH BASIN TYPE 2</b>	
APPROVED BY	DWG. NO.
	3-9
CITY ENGINEER	REVISED DATE
	4/14/2005





City of Chehalis

1" DUAL  
 WATER SERVICE

APPROVED BY

*[Signature]*

CITY ENGINEER

DWG. NO.

4-2

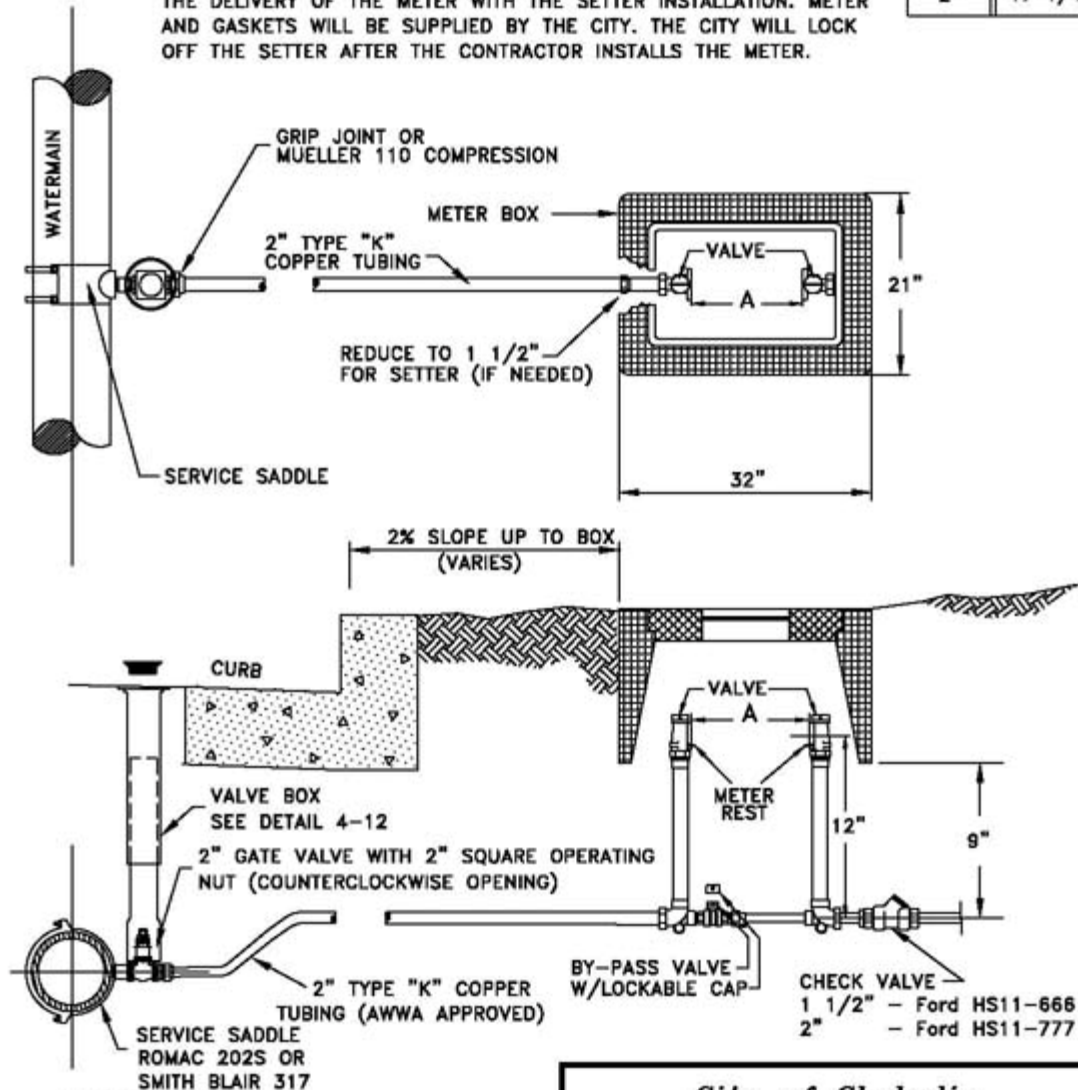
REVISED DATE

3/14/2005



WITH THE INSTALLATION OF 1 1/2" OR 2" METER SETTERS, THE CONTRACTOR SHALL INSTALL THE METER AT THE TIME THE SETTER IS PUT IN PLACE. THE CONTRACTOR SHALL CONTACT THE CITY 48 HOURS PRIOR TO INSTALLATION OF THE SETTER AND COORDINATE THE DELIVERY OF THE METER WITH THE SETTER INSTALLATION. METER AND GASKETS WILL BE SUPPLIED BY THE CITY. THE CITY WILL LOCK OFF THE SETTER AFTER THE CONTRACTOR INSTALLS THE METER.


SIZE	A
1 1/2"	13 1/4"
2"	17 1/4"

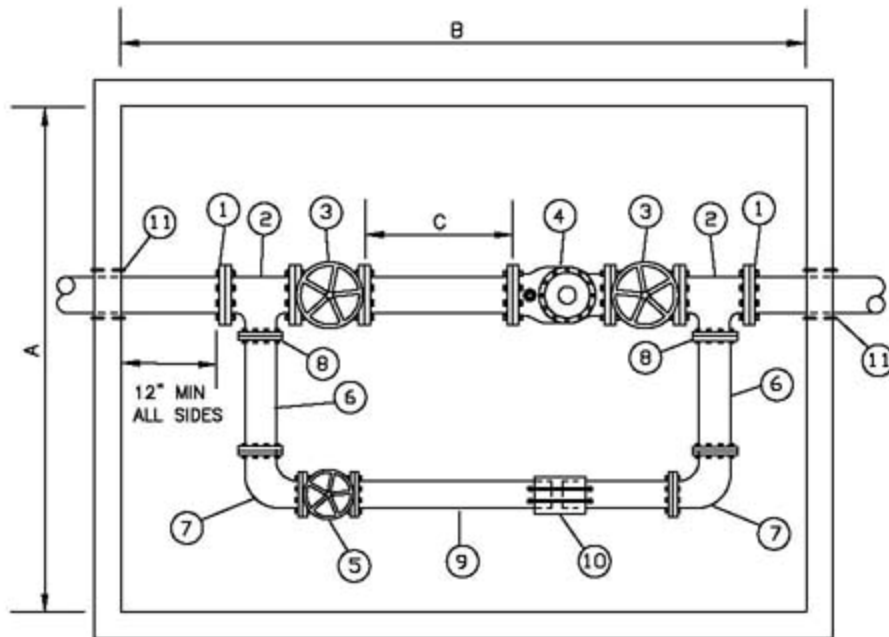


**NOTES:**

1. ALL SERVICE SADDLES SHALL HAVE RUBBER GASKET, I.P. THREADS, & STAINLESS STEEL DOUBLE STRAPS.
2. CITY STANDARD FOR COPPER SETTERS ARE:  
 1 1/2" - FORD VVF76-12B-13-11-66  
 2" - FORD VVF77-12B-17-11-77
3. THE CITY UTILIZES A TOUCH READ METER SYSTEM. METER LIDS FOR METER BOX INSTALLATIONS MUST BE DRILLED WITH A 2" HOLE TO ACCOMMODATE TOUCH PAD.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>1 1/2"-2" WATER SERVICE WITH BYPASS</b>	
APPROVED BY	DWG. NO.
	<b>4-3</b>
CITY ENGINEER	REVISED DATE
	<b>3/30/2005</b>



METER	Minimum Dimensions	"A"	"B"	"C"	DOOR SIZE	VAULT DEPTH	TEE
3" Compound		3' 6"	5' 6"	15'	3' X 3'	5' 0"	3' X 1 1/2"
4" Compound		3' 6"	8' 0"	20'	3' X 3'	5' 0"	4' X 2"
6" Compound		3' 6"	8' 0"	30'	3' X 3'	5' 0"	6' X 4"
8" Compound		4' 6"	10' 0"	40'	4' X 4'	5' 0"	8' X 6"

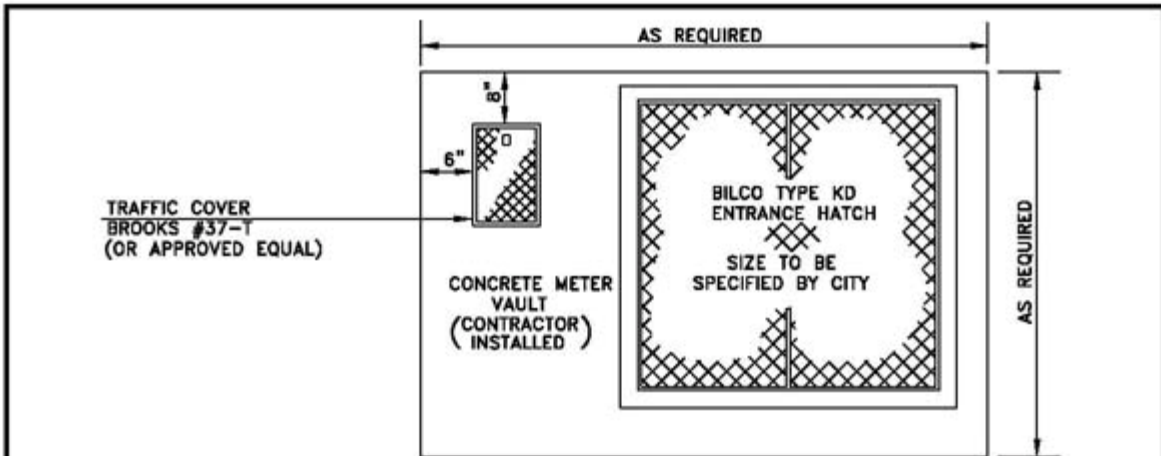
- ① FLEX X FLG COUPLING
- ⑧ COMPANION FLG
- ② ALL-FLG TEE
- ⑨ BRASS OR DUCTILE IRON PIPE
- ③ FLG RES. SEATED GATE VALVE W/HAND WHEEL
- ⑩ MECHANICAL COUPLING
- ④ COMPOUND METER
- ⑪ PIPE SLEEVE
- ⑤ GATE VALVE W/HAND WHEEL
- ⑥ BRASS OR DUCTILE IRON NIPPLES
- ⑦ 90° ELBOWS (MATERIAL TO BE SAME AS PIPE)

**NOTES:**

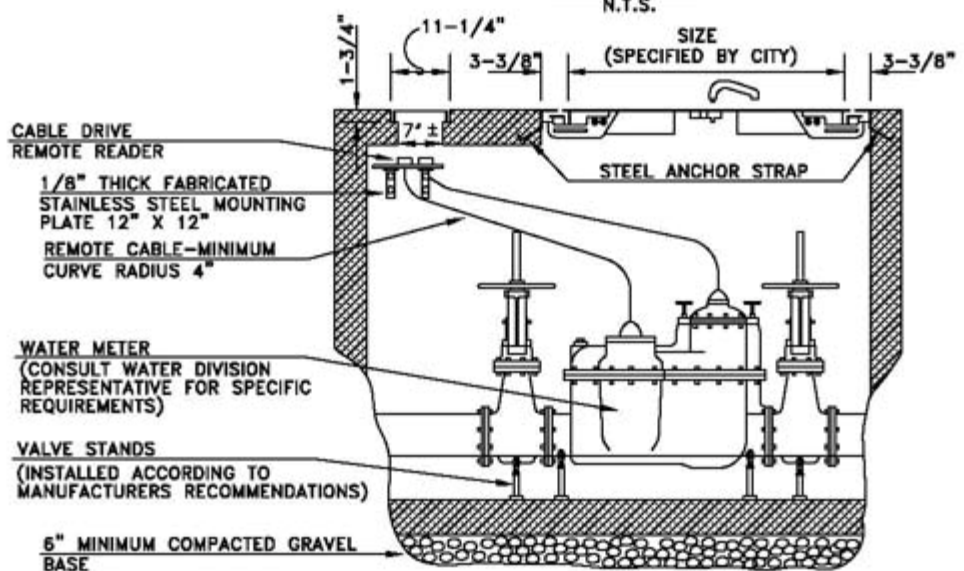
1. VAULT DIMENSIONS SHOWN ARE INSIDE. (MIN)
2. BACKFLOW PREVENTION IS NOT INCLUDED AS PART OF THIS DETAIL.
3. METER AND SERVICE LINE SIZES WILL VARY ACCORDING TO NEED.
4. ALL VAULTS WILL BE SUPPORTED BY ADEQUATE FOOTING OR FLOOR.
5. PIPE AND FIXTURES TO BE SET ON VALVE STANDS INSTALLED ACCORDING TO MANUFACTURERS SPECS.
6. REMOTE READER UNIT SHALL BE LOCATED IN A READILY ACCESSIBLE AREA OUTSIDE THE VAULT, AS APPROVED BY THE CITY.
7. DRAINAGE MUST BE PROVIDED FOR THE VAULT.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>COMPOUND WATER METER WITH BYPASS FOR 3"-8" WATER SERVICE</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-4
CITY ENGINEER	REVISED DATE
	1/02/2003



**PLAN VIEW**  
N.T.S.

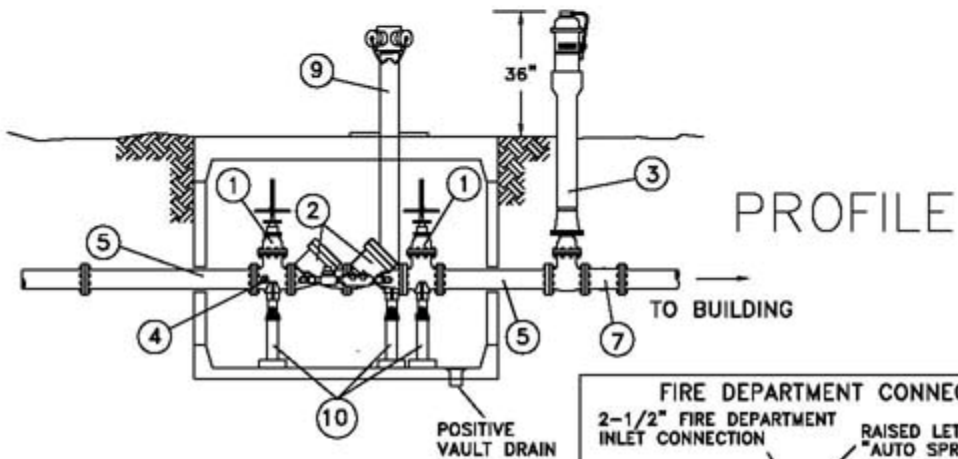
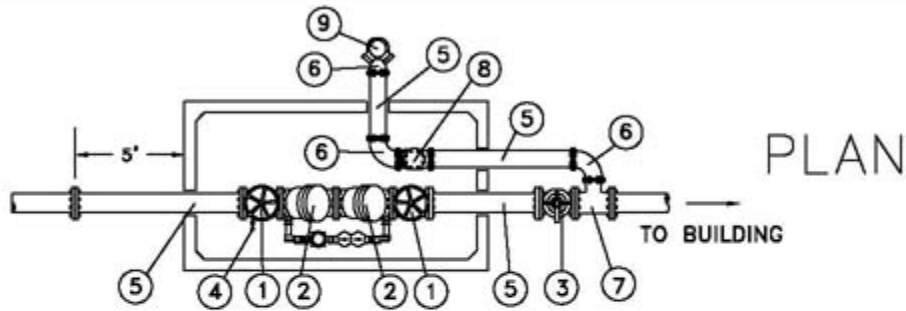


**ELEVATION VIEW**  
N.T.S.

- NOTES:**
- 1-Vault shall be designed by a structural engineer licensed in the state of Washington.
  - 2-Mounting plate to be installed by the contractor so that all reading registers are visible through traffic cover, and cable(s) do not interfere with access to meter.
  - 3-If remote meter read system with touch pad is used, touch pad shall be placed at the location of remote digital reader.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>LARGE METER VAULT</b>	
APPROVED BY	DWG. NO.
	<b>4-5</b>
CITY ENGINEER	REVISED DATE
	<b>3/16/2005</b>



**MATERIAL LIST:**

1. OS&Y RESILIENT SEATED GATE VALVE W/HANDWHEEL FL X FL
2. DOUBLE CHECK DETECTOR (DOH APPROVED) CHECK VALVE FL X FL
3. POST INDICATOR VALVE
4. 3/4" BALL VALVE (TEST COCK)
5. CLASS 52 DI WALL PIPE FL X FL
6. CLASS 52 DI 90° BEND FL X FL
7. CLASS 52 DI TEE FL X FL
8. SWING CHECK VALVE W/BALL DRIP ASSEMBLY
9. FIRE DEPARTMENT CONNECTION
10. VALVE STANDS
11. WHERE PIPING PASSES THROUGH CONCRETE WALL PROVIDE 2" CLEARANCE W/ WATERPROOF MASTIC OR FLEXIBLE SEALANT

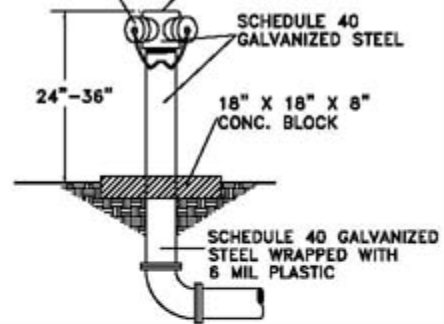
**GENERAL NOTES:**

- A. PIPE FROM VAULT TO BUILDING SHALL BE CLASS 52 DI.
- B. TAMPER SWITCHES SHALL BE INSTALLED ON 1 AND 3 CONNECTED TO BUILDING FIRE ALARM SYSTEM.
- C. INSTALL PLUGS ON ALL TEST COCKS. FINGER TIGHTEN.
- D. ALL PIPING SHALL BE A MINIMUM OF 4" DIA. AS PER NFPA13.

Drawing Not to Scale

**FIRE DEPARTMENT CONNECTION**

2-1/2" FIRE DEPARTMENT INLET CONNECTION  
RAISED LETTERS "AUTO SPRINKLER"



*City of Chehalis*

**FIRE DEPARTMENT CONNECTION W/ DCDA FOR SINGLE SERVICE**

APPROVED BY

*James R Nichols*

CITY ENGINEER

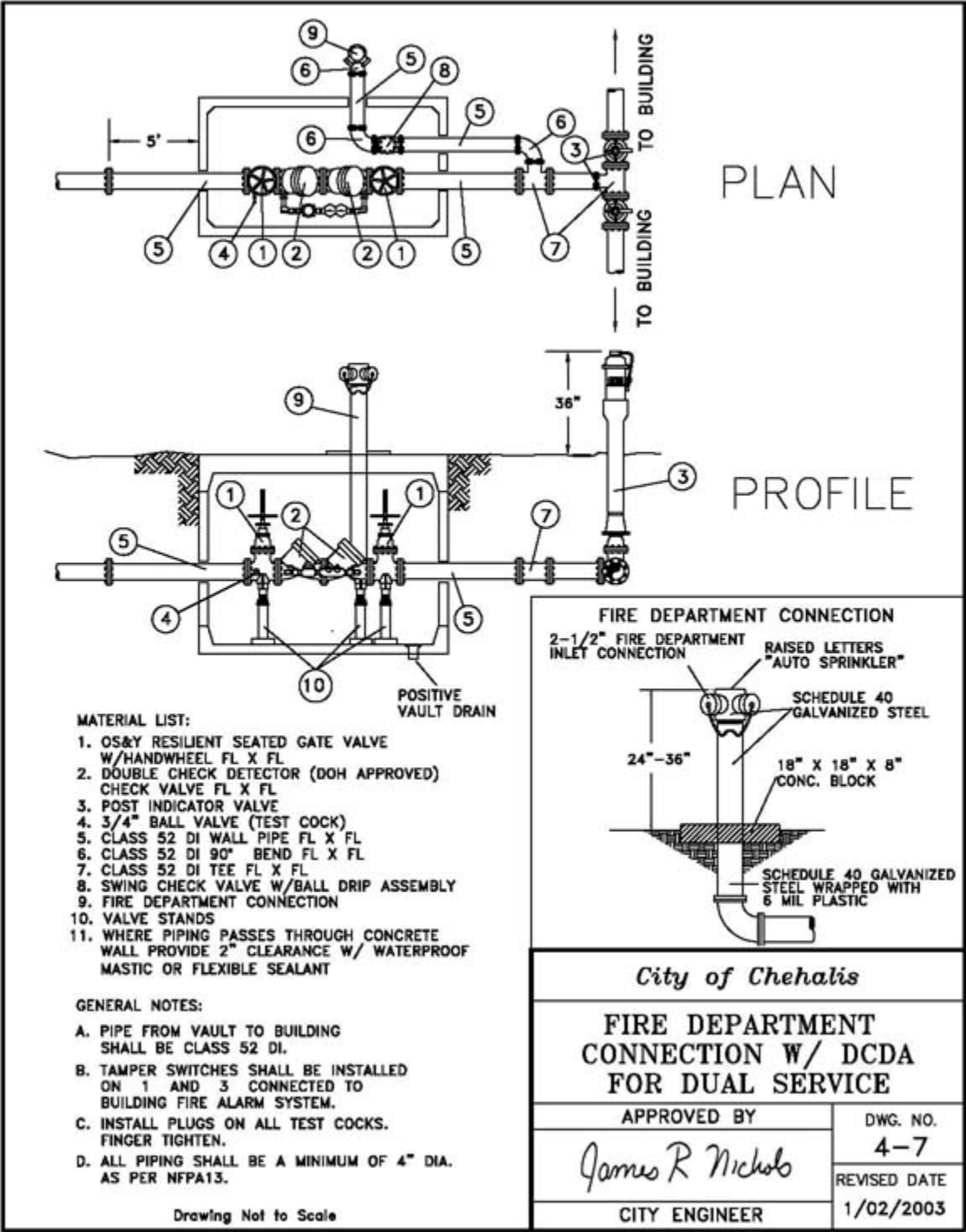
DWG. NO.

4-6

REVISED DATE

1/02/2003





PLAN

PROFILE

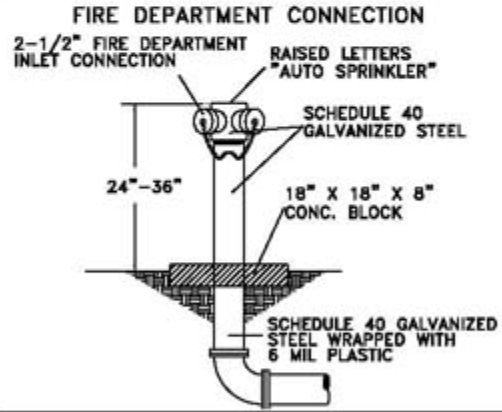
**MATERIAL LIST:**

1. OS&Y RESILIENT SEATED GATE VALVE W/HANDWHEEL FL X FL
2. DOUBLE CHECK DETECTOR (DOH APPROVED) CHECK VALVE FL X FL
3. POST INDICATOR VALVE
4. 3/4" BALL VALVE (TEST COCK)
5. CLASS 52 DI WALL PIPE FL X FL
6. CLASS 52 DI 90° BEND FL X FL
7. CLASS 52 DI TEE FL X FL
8. SWING CHECK VALVE W/BALL DRIP ASSEMBLY
9. FIRE DEPARTMENT CONNECTION
10. VALVE STANDS
11. WHERE PIPING PASSES THROUGH CONCRETE WALL PROVIDE 2" CLEARANCE W/ WATERPROOF MASTIC OR FLEXIBLE SEALANT

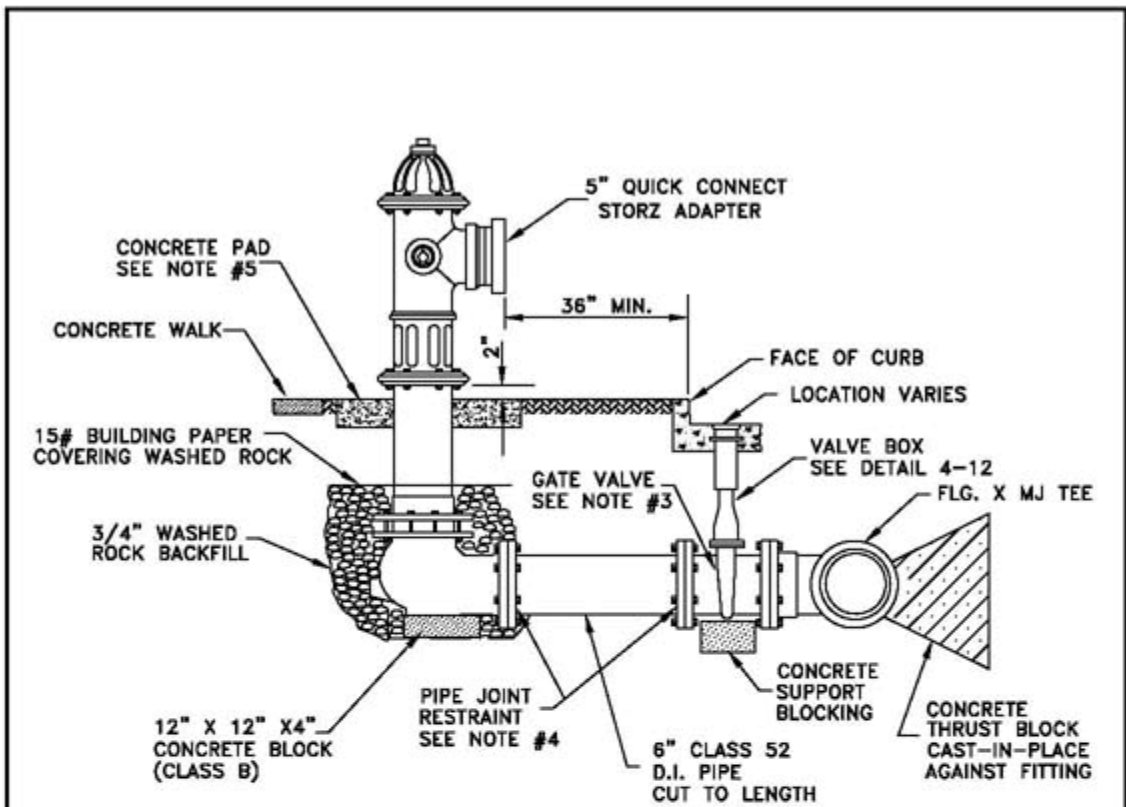
**GENERAL NOTES:**

- A. PIPE FROM VAULT TO BUILDING SHALL BE CLASS 52 DI.
- B. TAMPER SWITCHES SHALL BE INSTALLED ON 1 AND 3 CONNECTED TO BUILDING FIRE ALARM SYSTEM.
- C. INSTALL PLUGS ON ALL TEST COCKS. FINGER TIGHTEN.
- D. ALL PIPING SHALL BE A MINIMUM OF 4" DIA. AS PER NFPA13.

Drawing Not to Scale




<i>City of Chehalis</i>	
<b>FIRE DEPARTMENT CONNECTION W/ DCDA FOR DUAL SERVICE</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-7
CITY ENGINEER	REVISED DATE
	1/02/2003

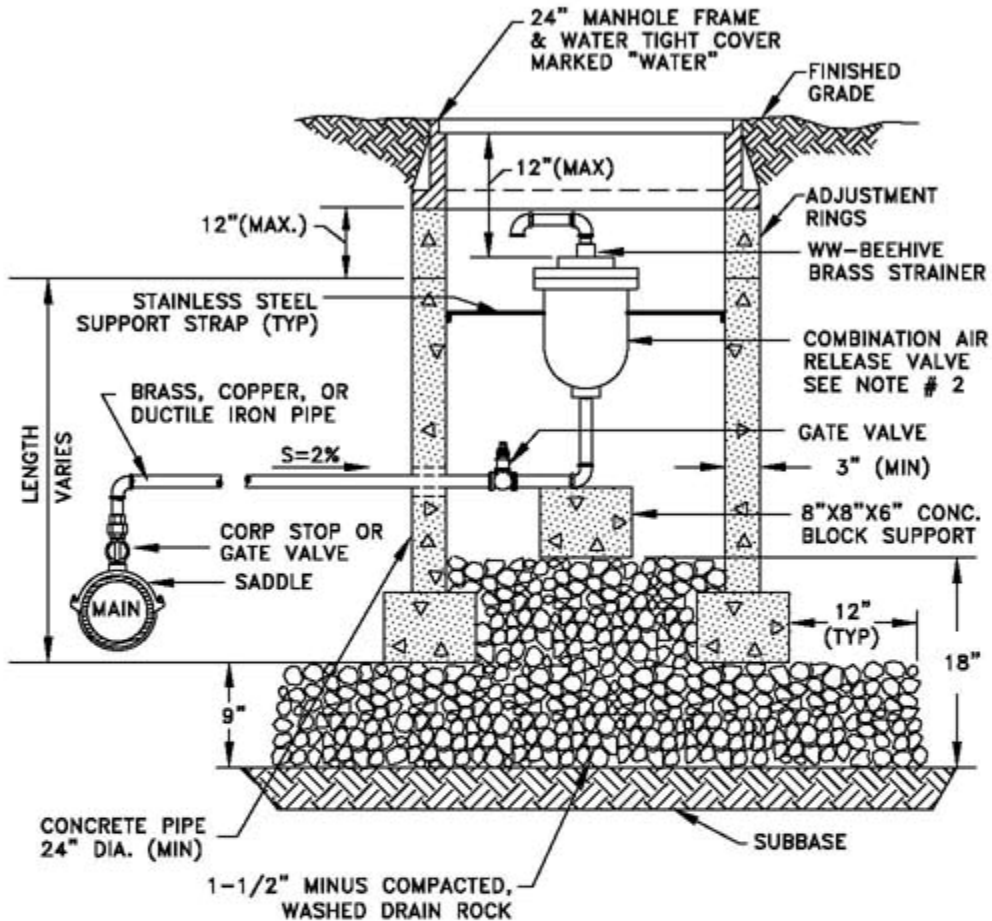


**NOTES**

1. HYDRANTS SHALL BE LOCATED WITHIN THE STREET RIGHT-OF-WAY, WITH A MINIMUM THREE-FOOT RADIUS UNOBSTRUCTED WORKING AREA.
2. HYDRANT SHALL BE MUELLER CENTURION A423, AVK 2780, M & H RELIANT STYLE 929, KENNEDY GUARDIAN K81D, CLOW MEDALION, OR WATEROUS PACER MODEL WB-67-250.
3. GATE VALVES SHALL BE RESILIENT WEDGE NRS WITH O-RING SEALS. VALVE ENDS SHALL BE MECHANICAL JOINT BY ANSI FLANGES. VALVES SHALL CONFORM TO AWWA 509-80. VALVES SHALL BE MUELLER, M&H, AMERICAN FLOW CONTROL SERIES 2500, CLOW R/W, KENNEDY, OR AVK.
4. EACH MECHANICAL PIPE JOINT SHALL BE RESTRAINED USING ROMAC GRIP RINGS, MEGALUG SERIES 1106 JOINT RESTRAINT, OR 3/4" DIA. GALVANIZED OR COATED STEEL RESTRAINING RODS.
5. A 4' X 4' X 8" DEEP CONCRETE PAD WILL BE Poured AROUND THE HYDRANT.
6. HYDRANT SHALL BE PAINTED SUNBURST YELLOW HIGH-GRADE ENAMEL AFTER INSTALLATION.
7. MINIMUM HYDRANT BURY SHALL BE 30".

DRAWING NOT TO SCALE


<i>City of Chehalis</i>	
<b>FIRE HYDRANT</b>	
APPROVED BY	DWG. NO.
	<b>4-8</b>
CITY ENGINEER	REVISED DATE
	<b>3/14/2005</b>



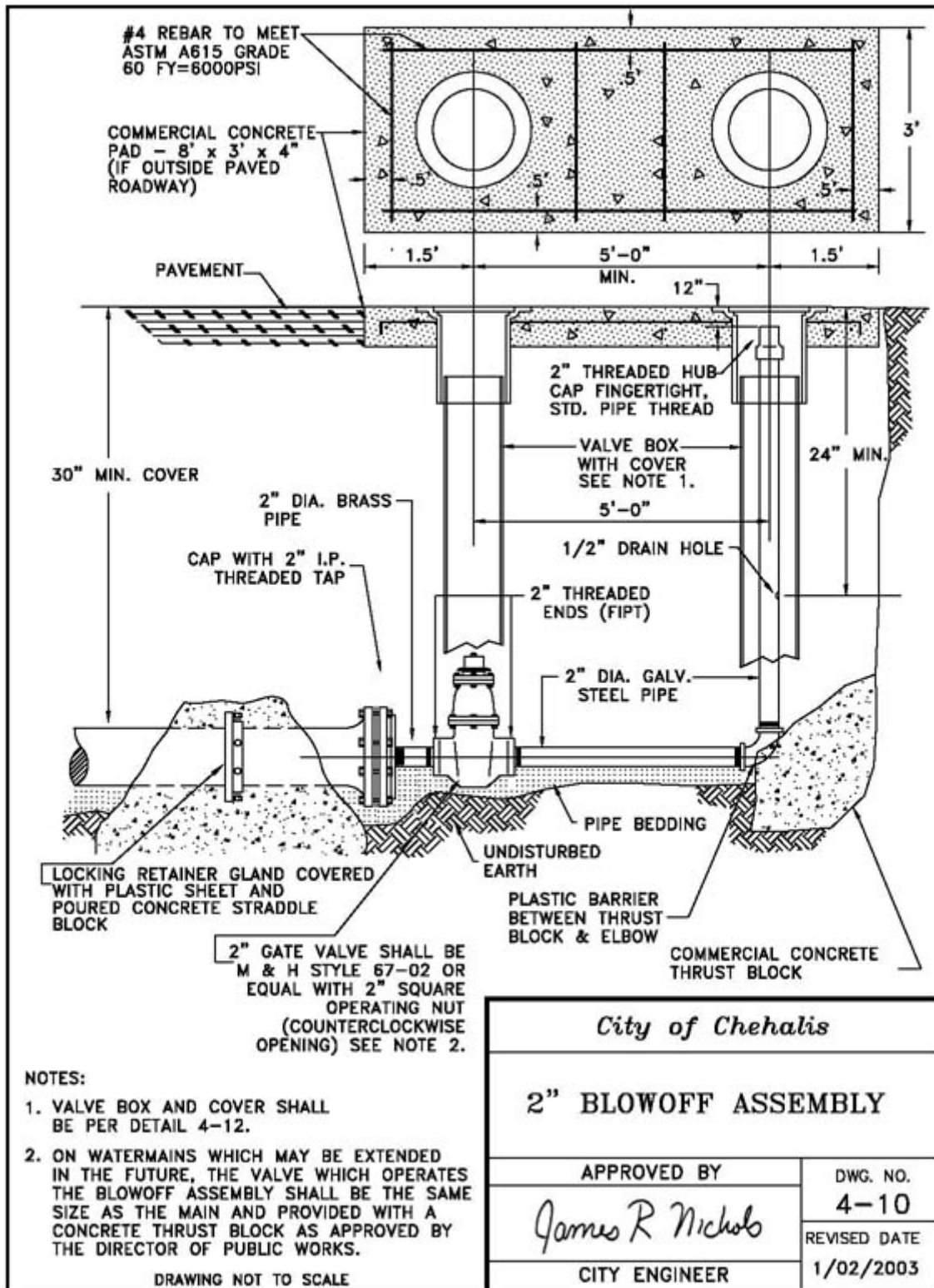
**NOTES:**

1. VALVE ASSEMBLY SHALL BE SET AT THE HIGH POINT OF THE LINE.
2. COMBINATION A.V./A.R. VALVE SHALL BE APCO 140 SERIES, AS DICTATED BY THE SIZE OF THE WATER MAIN.
3. A MINIMUM OF ONE 4" ADJUSTMENT RING MUST BE PROVIDED IN TRAFFIC AREA SETTINGS.
4. ADJUSTMENT RINGS AND MANHOLE RING TO BE GROUTED, WATER TIGHT.
5. ALL FITTINGS WILL BE BRASS, COPPER, OR DUCTILE IRON, DEPENDING ON THE TYPE OF PIPE USED.
6. ENCLOSURE WILL BE DESIGNED TO WITHSTAND TRAFFIC LOADS WHEN SET IN TRAFFIC AREAS.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>AIR AND VACUUM RELIEF VALVE</b>	
APPROVED BY	DWG. NO.
	<b>4-9</b>
CITY ENGINEER	REVISED DATE
	<b>3/14/2005</b>





**NOTES:**

1. VALVE BOX AND COVER SHALL BE PER DETAIL 4-12.
2. ON WATERMAINS WHICH MAY BE EXTENDED IN THE FUTURE, THE VALVE WHICH OPERATES THE BLOWOFF ASSEMBLY SHALL BE THE SAME SIZE AS THE MAIN AND PROVIDED WITH A CONCRETE THRUST BLOCK AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

DRAWING NOT TO SCALE

*City of Chehalis*

**2" BLOWOFF ASSEMBLY**

APPROVED BY

*James R Nichols*

CITY ENGINEER

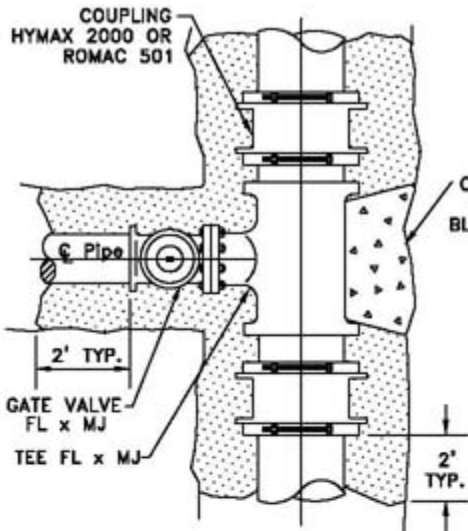
DWG. NO.

**4-10**

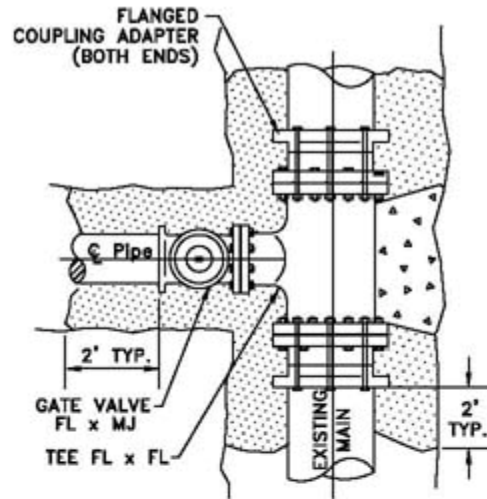
REVISED DATE

1/02/2003

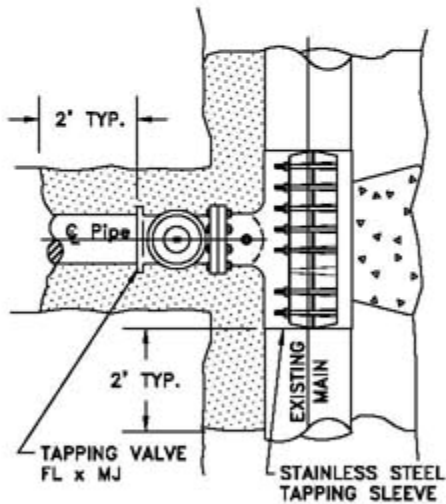




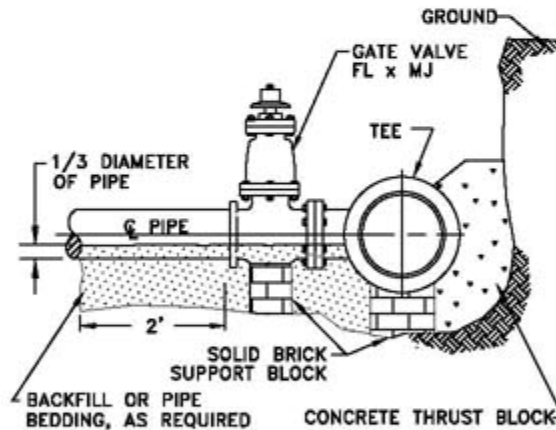
**CUT-IN-TEE  
MJ TEE**



**CUT-IN-TEE  
FLANGED TEE**



**LIVE TAP**



**SECTION VIEW  
(TYPICAL)**

**NOTES:**

1. 11 MIL PLASTIC OR CONSTRUCTION FABRIC SHALL BE WRAPPED AROUND PIPE AND FITTINGS BEFORE THRUST BLOCK AND BACKFILL ARE POURED.
2. SUPPORT VALVE AND SLEEVE CONTINUOUSLY THROUGH INSTALLATION.

DRAWING NOT TO SCALE

*City of Chehalis*

**CONNECTION TO  
EXISTING MAIN**

APPROVED BY

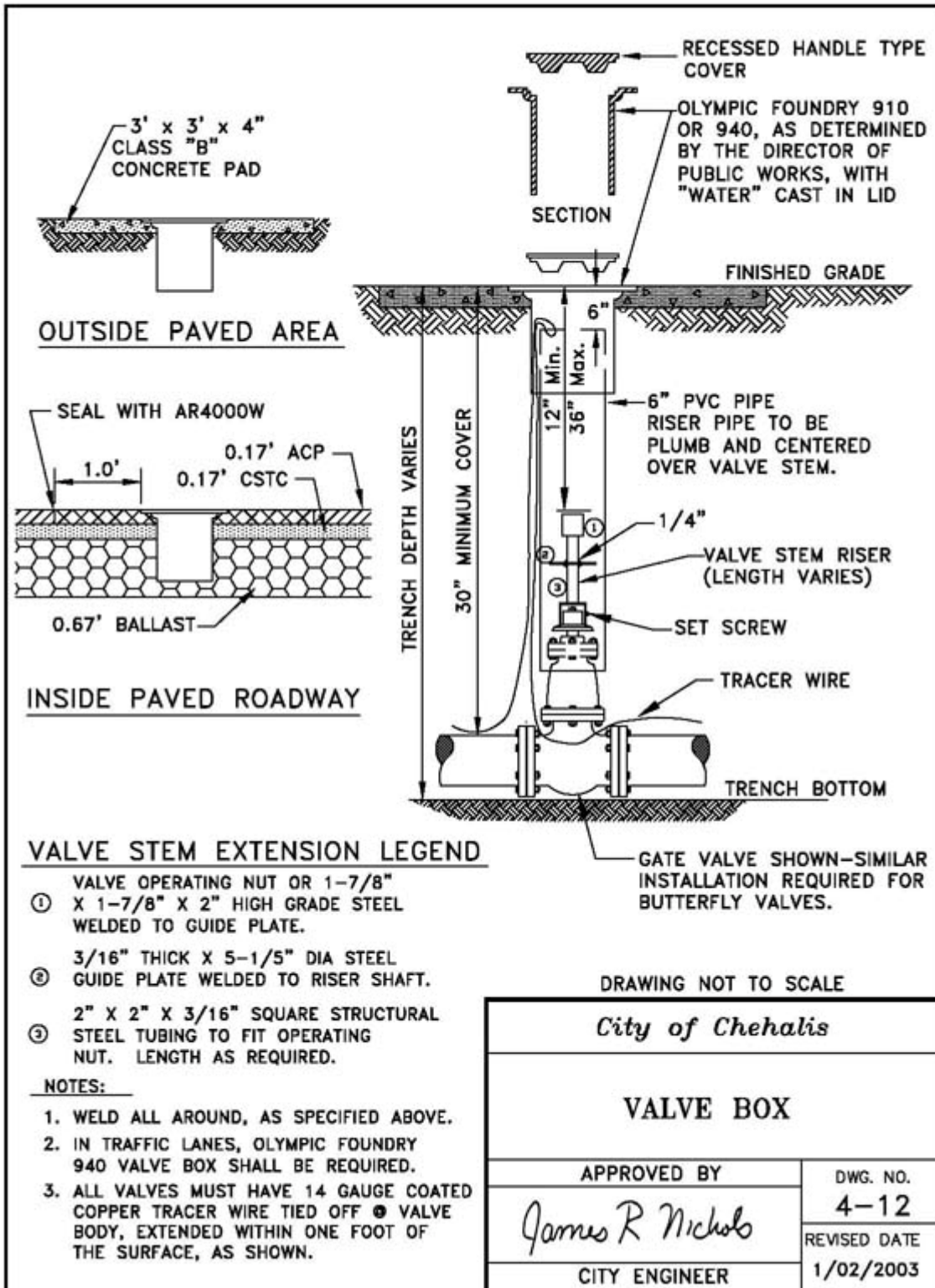
CITY ENGINEER

DWG. NO.

4-11

REVISED DATE

3/16/2005



**VALVE STEM EXTENSION LEGEND**

- ① VALVE OPERATING NUT OR 1-7/8" X 1-7/8" X 2" HIGH GRADE STEEL WELDED TO GUIDE PLATE.
- ② 3/16" THICK X 5-1/5" DIA STEEL GUIDE PLATE WELDED TO RISER SHAFT.
- ③ 2" X 2" X 3/16" SQUARE STRUCTURAL STEEL TUBING TO FIT OPERATING NUT. LENGTH AS REQUIRED.

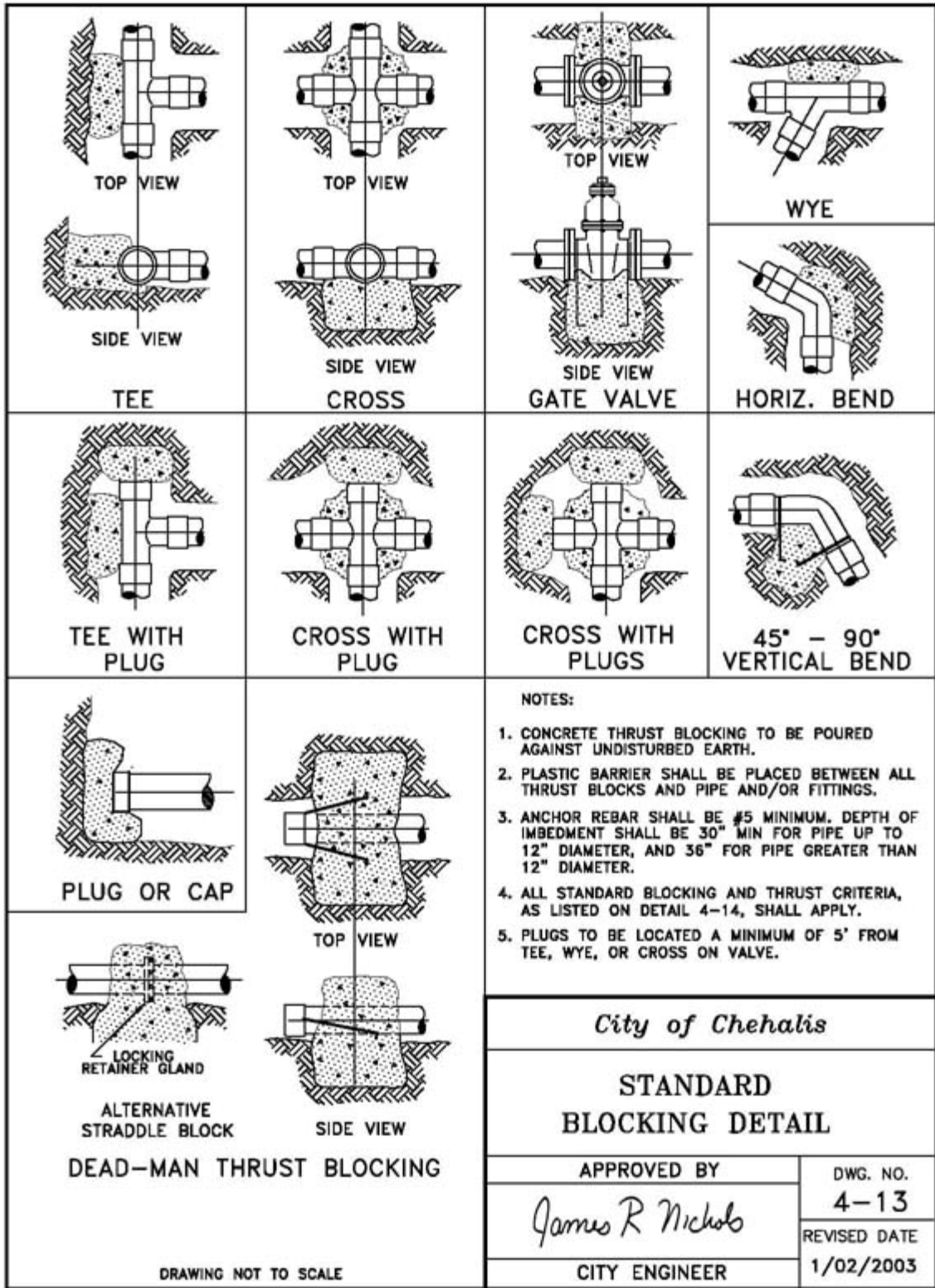
- NOTES:**
1. WELD ALL AROUND, AS SPECIFIED ABOVE.
  2. IN TRAFFIC LANES, OLYMPIC FOUNDRY 940 VALVE BOX SHALL BE REQUIRED.
  3. ALL VALVES MUST HAVE 14 GAUGE COATED COPPER TRACER WIRE TIED OFF ① VALVE BODY, EXTENDED WITHIN ONE FOOT OF THE SURFACE, AS SHOWN.

DRAWING NOT TO SCALE

*City of Chehalis*

**VALVE BOX**

APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-12
CITY ENGINEER	REVISED DATE
	1/02/2003





### THRUST LOADS

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

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

**NOTES:**

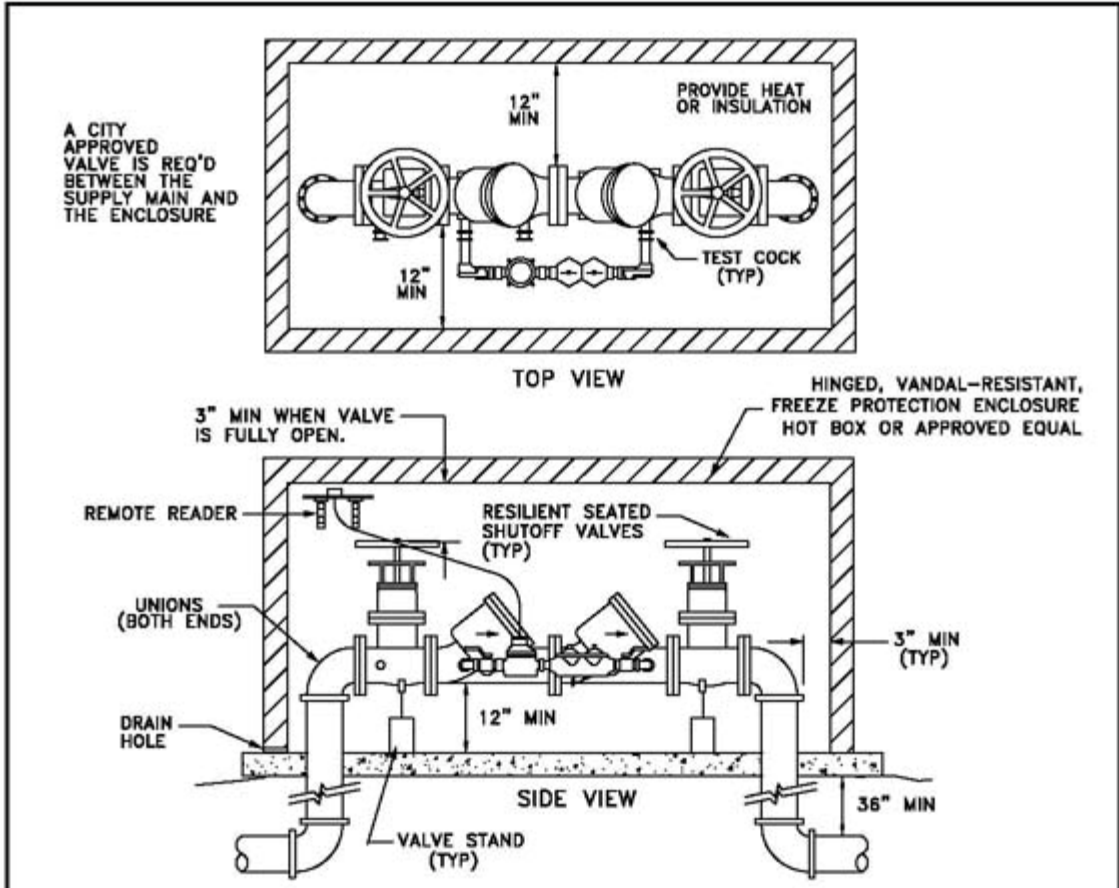
1. BLOCKING SHALL BE CEMENT CONCRETE CLASS "B" POURED IN PLACE AGAINST UNDISTURBED EARTH. FITTINGS & PIPE SHALL BE ISOLATED FROM CONCRETE THRUST BLOCK WITH PLASTIC OR SIMILAR MATERIAL.
2. TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (S.F.):  
 EXAMPLE : 12" - 90° BEND IN SAND AND GRAVEL  
 $32,000 \text{ LBS} \div 3000 \text{ LB/S.F.} = 10.7 \text{ S.F. OF AREA}$
3. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZE, PRESSURES AND SOIL CONDITIONS.
4. BLOCKING SHALL BE ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

### SAFE SOIL BEARING LOADS

FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET

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

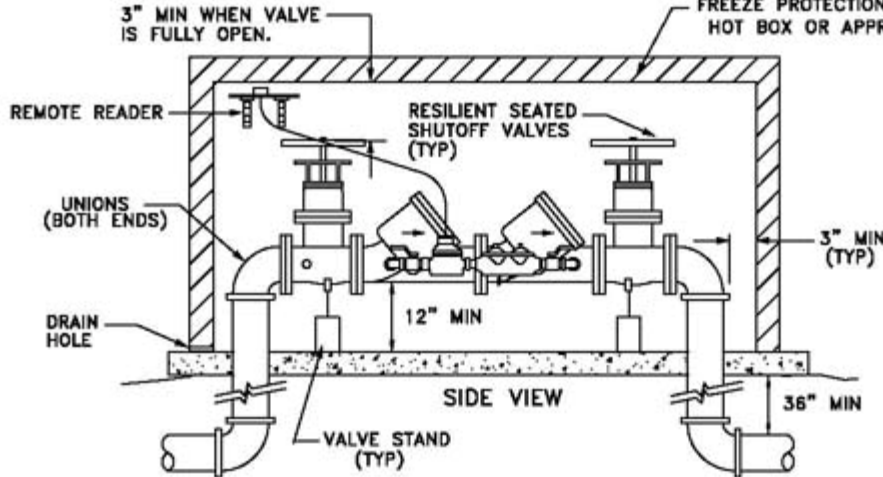
<i>City of Chehalis</i>	
<b>THRUST LOADS</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-14
CITY ENGINEER	REVISED DATE
	1/02/2003



A CITY APPROVED VALVE IS REQ'D BETWEEN THE SUPPLY MAIN AND THE ENCLOSURE

TOP VIEW

HINGED, VANDAL-RESISTANT, FREEZE PROTECTION ENCLOSURE HOT BOX OR APPROVED EQUAL



SIDE VIEW

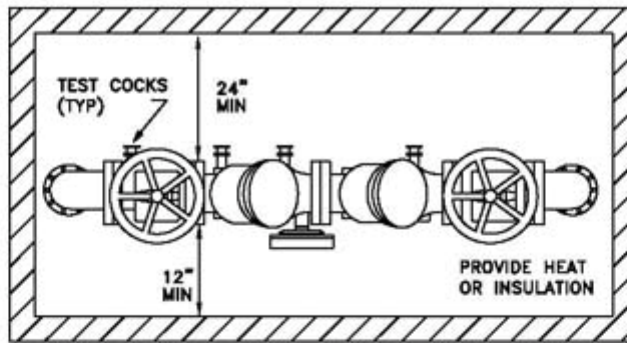
ABOVE GROUND INSTALLATION

NOTES:

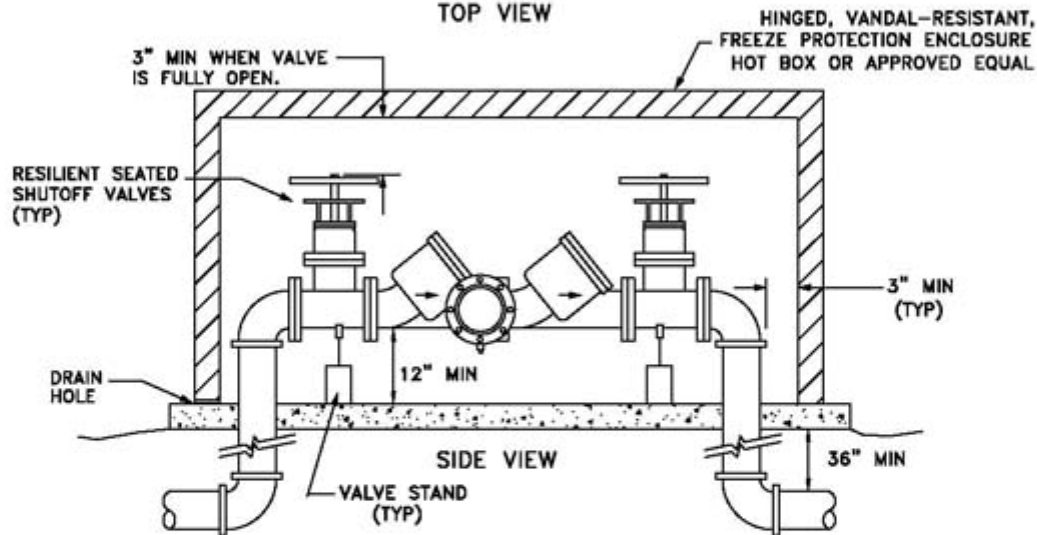
1. DOUBLE CHECK DETECTOR CHECK VALVE ASSEMBLY SHALL BE WASHINGTON STATE DEPT. OF HEALTH APPROVED MODEL.
2. BACKFLOW ASSEMBLY SHALL BE AN APPROVED MODEL W/4 TEST COCKS AND A RESILIENT SEATED SHUT OFF VALVE MOUNTED AT EACH END.
3. THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION AND PRIOR TO ACCEPTANCE BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. ANNUAL TESTING IS REQUIRED THEREAFTER. TEST RESULTS SHALL BE SENT TO THE CHEHALIS WATER DIVISION.
4. ALL PIPE, VALVE, AND FITTING JOINTS FROM THE SUPPLY MAIN, SHALL BE FLANGED AND RESTRAINED.
5. THE WATER LINE SHALL BE DISINFECTED, FLUSHED, AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
6. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
7. SEAL PIPE ENTRANCE AND EXIT, THROUGH ENCLOSURE, SO AS TO BE WATER TIGHT.
8. ALL ENCLOSURES SHALL BE PRE-APPROVED BY THE CITY, PRIOR TO INSTALLATION.
9. ENCLOSURES SHALL BE INSTALLED AT PROPERTY LINE ON OWNERS PROPERTY.
10. ENCLOSURES SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
11. VALVE STANDS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.

<i>City of Chehalis</i>	
<b>STANDARD DOUBLE CHECK DETECTOR ASSEMBLY 3" OR LARGER</b>	
APPROVED BY	DWG. NO.
	<b>4-15</b>
CITY ENGINEER	REVISED DATE
	1/02/2003

A CITY APPROVED VALVE IS REQ'D. BETWEEN THE SUPPLY MAIN AND THE ENCLOSURE.



TOP VIEW



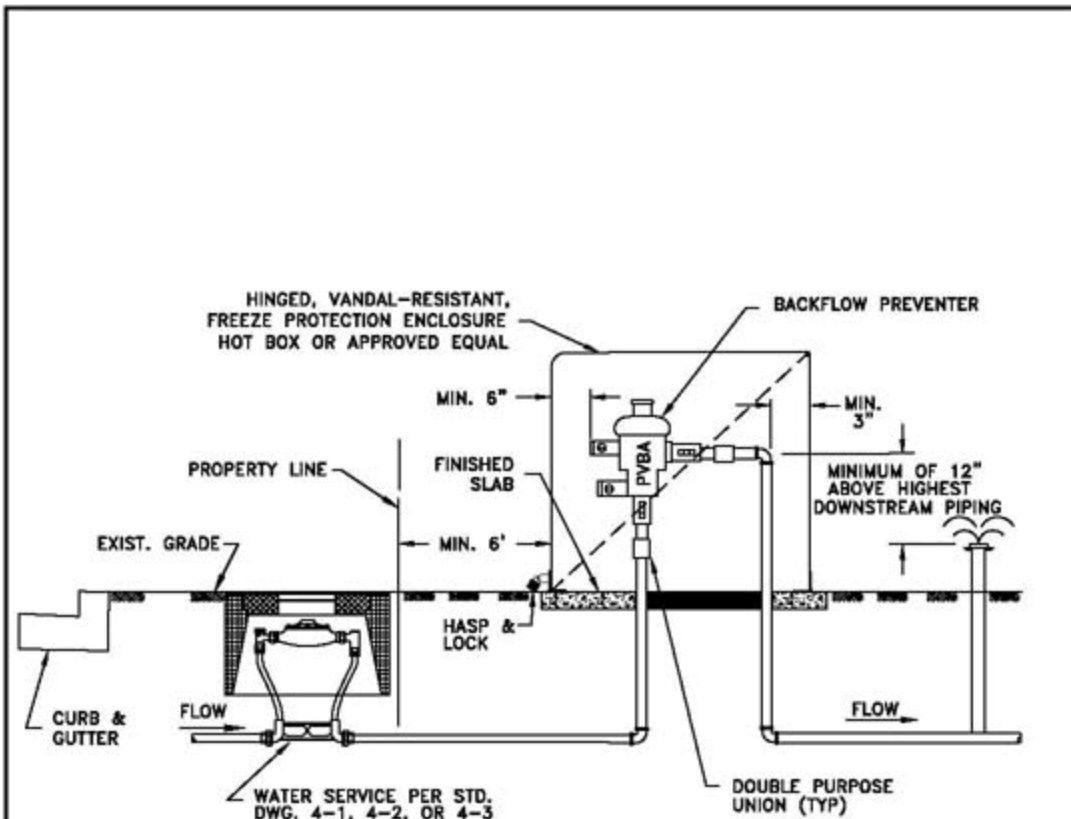
ABOVE GROUND INSTALLATION

NOTES:

1. BACKFLOW ASSEMBLY SHALL BE A WASHINGTON STATE DEPT. OF HEALTH APPROVED MODEL.
2. APPROVED BACKFLOW ASSEMBLY TO LAY HORIZONTAL ONLY.
3. THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION AND PRIOR TO ACCEPTANCE BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. ANNUAL TESTING IS REQUIRED THEREAFTER. TEST RESULTS SHALL BE SENT TO THE CHEHALIS WATER SUPT.
4. ALL PIPE, VALVE, AND FITTING JOINTS FROM THE SUPPLY MAIN, SHALL BE FLANGED AND RESTRAINED.
5. THE WATER LINE SHALL BE DISINFECTED, FLUSHED, AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
6. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
7. SEAL PIPE ENTRANCE AND EXIT, THROUGH ENCLOSURE, SO AS TO BE WATER TIGHT.
8. ALL ENCLOSURES SHALL BE PRE-APPROVED BY THE CITY, PRIOR TO INSTALLATION.
9. ENCLOSURES SHALL BE INSTALLED AT PROPERTY LINE ON OWNERS SIDE.
10. ENCLOSURES SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
11. VALVE STANDS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
12. TEST COCKS SHALL BE LOCATED SO AS TO FACILITATE ACCESS.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>STANDARD REDUCED PRESSURE BACKFLOW ASSEMBLY 3" OR LARGER</b>	
APPROVED BY	DWG. NO. <b>4-16</b>
<i>James R Nichols</i>	REVISED DATE
CITY ENGINEER	1/02/2003



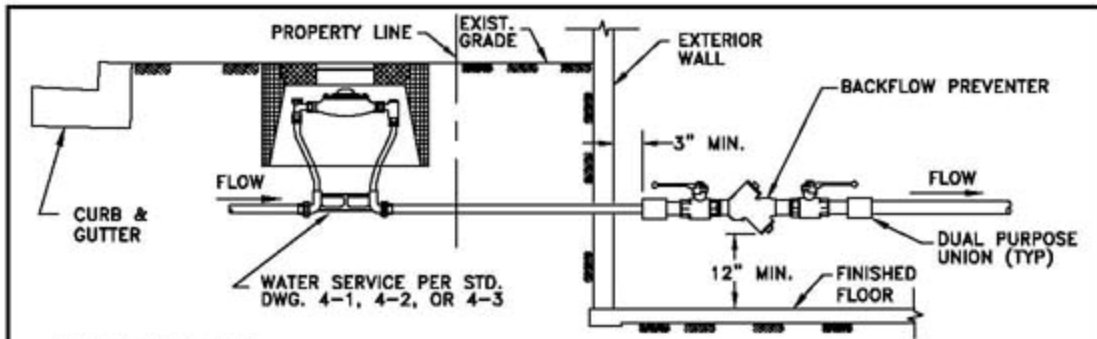
**NOTES:**

1. BACKFLOW ASSEMBLY SHALL BE WASHINGTON STATE DEPT. OF HEALTH APPROVED MODEL.
2. THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION AND PRIOR TO ACCEPTANCE BY A CERTIFIED BACKFLOW ASSEMBLY TESTER. ANNUAL TESTING IS REQUIRED THEREAFTER. TEST RESULTS SHALL BE SENT TO THE CHEHALIS WATER SUPT.
3. ALL MATERIALS TO BE BRASS OR COPPER AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
4. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
5. FINISHED SLAB SHALL BE SLOPED TO DRAIN.
6. ALL VAULTS SHALL BE PRE-APPROVED PRIOR TO INSTALLATION.

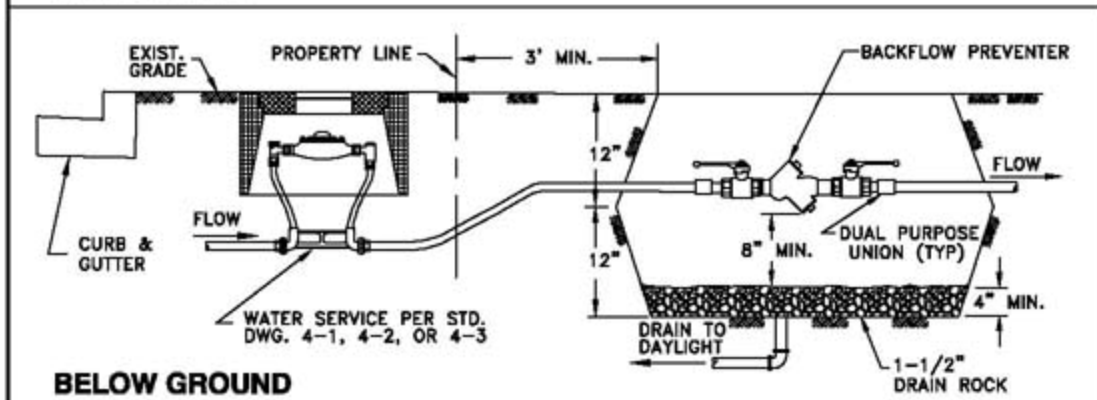
DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>1/2"-2" PVBA/SVBA BACKFLOW PREVENTER</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	<b>4-17</b>
CITY ENGINEER	REVISED DATE
	1/02/2003

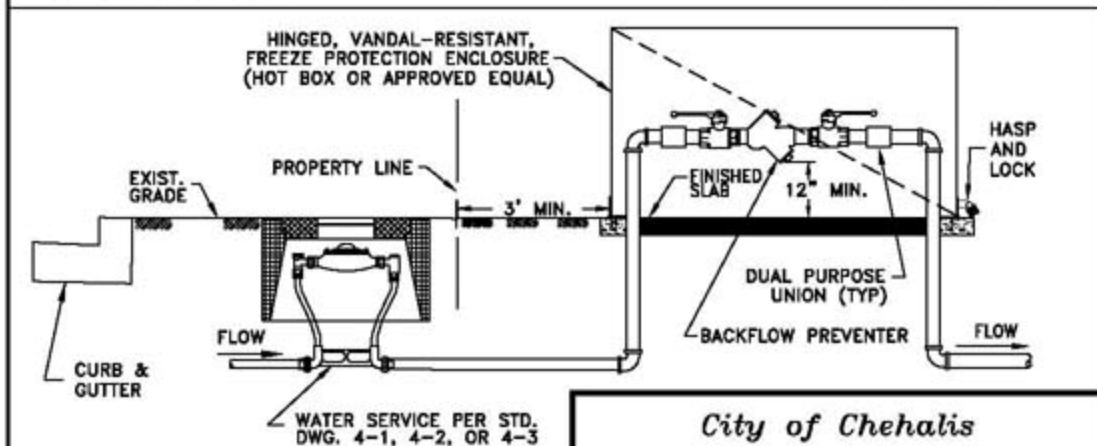




**IN BASEMENT**



**BELOW GROUND**



**ABOVE GROUND**

**NOTES:**

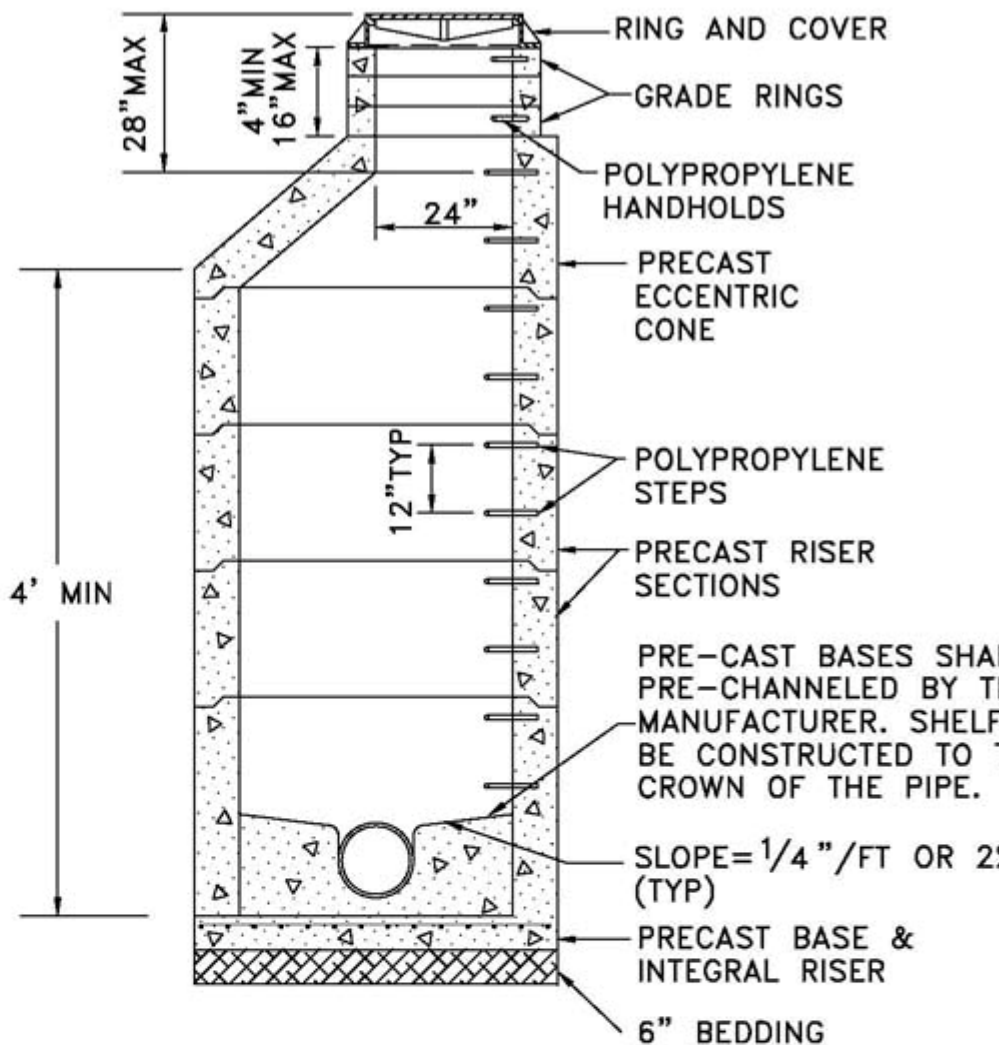
1. BACKFLOW ASSEMBLY SHALL BE A WA. STATE D.O.H. APPROVED MODEL.
2. ALL MATERIALS TO BE BRASS OR COPPER AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>1/2"-2" DOUBLE CHECK BACKFLOW PREVENTER</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	4-18
CITY ENGINEER	REVISED DATE
	1/02/2003



## 5-1 Typical Manhole



**NOTES:**

1. PRECAST MANHOLES SHALL MEET THE REQUIREMENTS OF ASTM C478. JOINTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C443 AND SHALL BE GROUTED FROM THE INSIDE & OUTSIDE. LIFT HOLES SHALL BE GROUTED FROM THE OUTSIDE & INSIDE OF THE MANHOLE.
2. STEPS IN MANHOLE SHALL HAVE 6" MINIMUM CLEARANCE. HANDHOLES IN ADJUSTMENT SECTION SHALL HAVE 3" MINIMUM CLEARANCE. THE FIRST STEP OR HANDHOLD SHALL BE A MAXIMUM OF 12" FROM THE TOP OF THE COVER.
3. CONNECTION TO MANHOLE SHALL BE MADE BY KOR-N-SEAL BOOT, UNLESS AN ALTERNATIVE CONNECTION METHOD IS SPECIFICALLY APPROVED AND AUTHORIZED BY THE PUBLIC WORKS DIRECTOR.

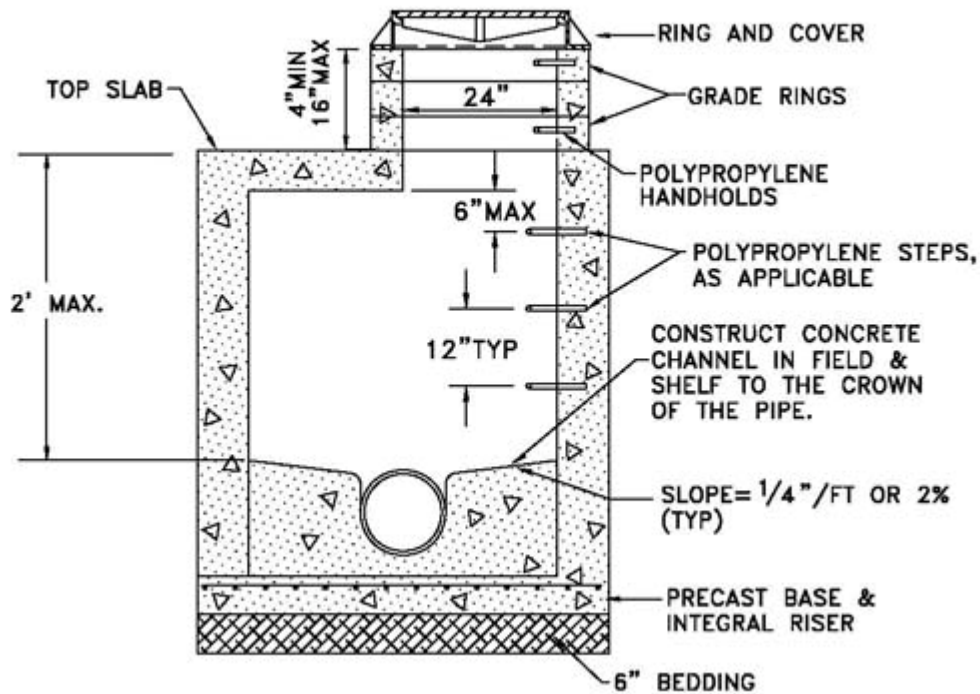
4. NON-REINFORCED CONCRETE IN CHANNEL AND SHELF SHALL BE CLASS 3000.

5. SEE DETAIL 5-7 FOR MANHOLE COLLAR

*City of Chehalis*

**TYPICAL  
MANHOLE**

[Ord. 819B § 18, 2007.]



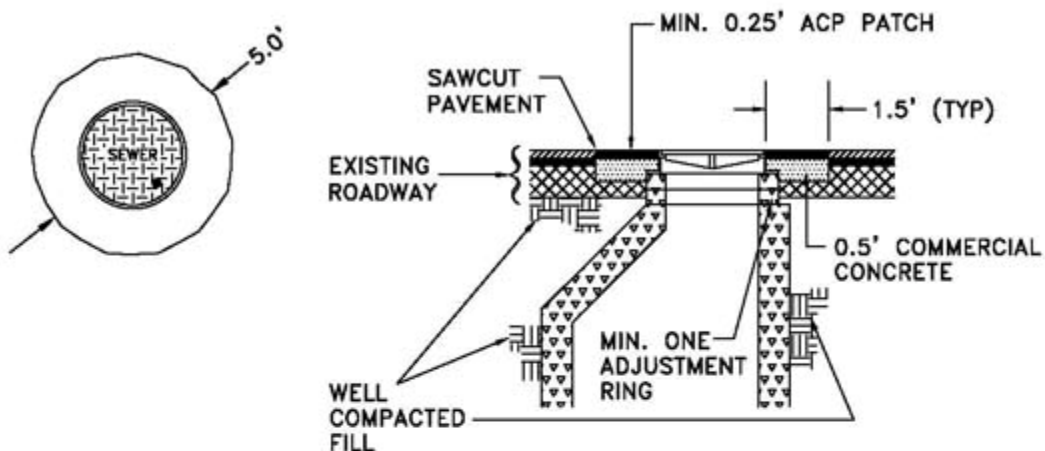
**NOTES:**

1. PRECAST MANHOLES SHALL MEET THE REQUIREMENTS OF ASTM C478. JOINTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C443 AND SHALL BE GROUTED FROM THE INSIDE & OUTSIDE. LIFT HOLES SHALL BE GROUTED FROM THE INSIDE & OUTSIDE OF THE MANHOLE.
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3. CONNECTION TO MANHOLE SHALL BE MADE BY KOR-N-SEAL BOOT, UNLESS AN ALTERNATIVE CONNECTION METHOD IS SPECIFICALLY APPROVED AND AUTHORIZED BY THE PUBLIC WORKS DIRECTOR.
4. NON-REINFORCED CONCRETE IN CHANNEL AND SHELF SHALL BE CLASS 3000.
5. SEE DETAIL 5-3 FOR MANHOLE COLLAR INSTALLATION.
6. A SEWER GUARD SHALL BE INSTALLED IN ANY MANHOLE SUBJECT TO FLOODING.

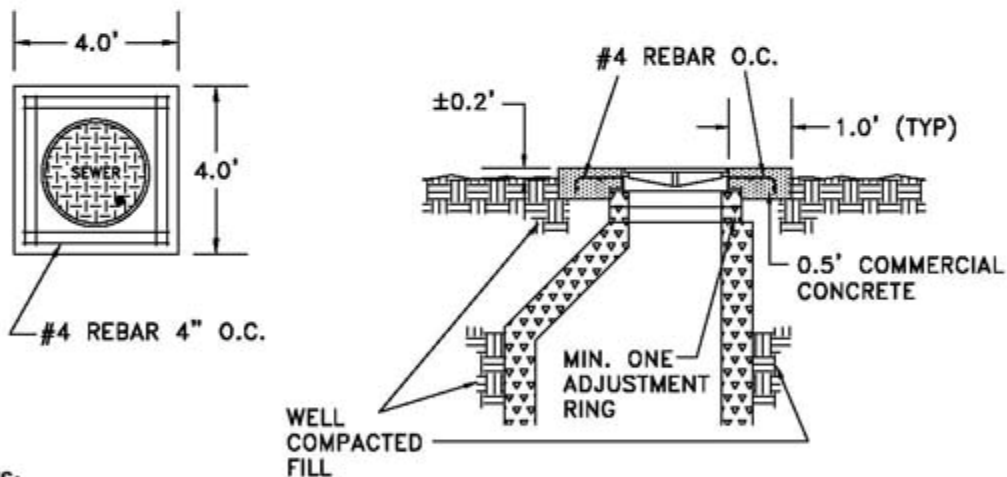
DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>SHALLOW MANHOLE</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	5-2
CITY ENGINEER	REVISED DATE
	1/02/2003

## MANHOLE IN ASPHALT



## MANHOLE OUTSIDE ASPHALT

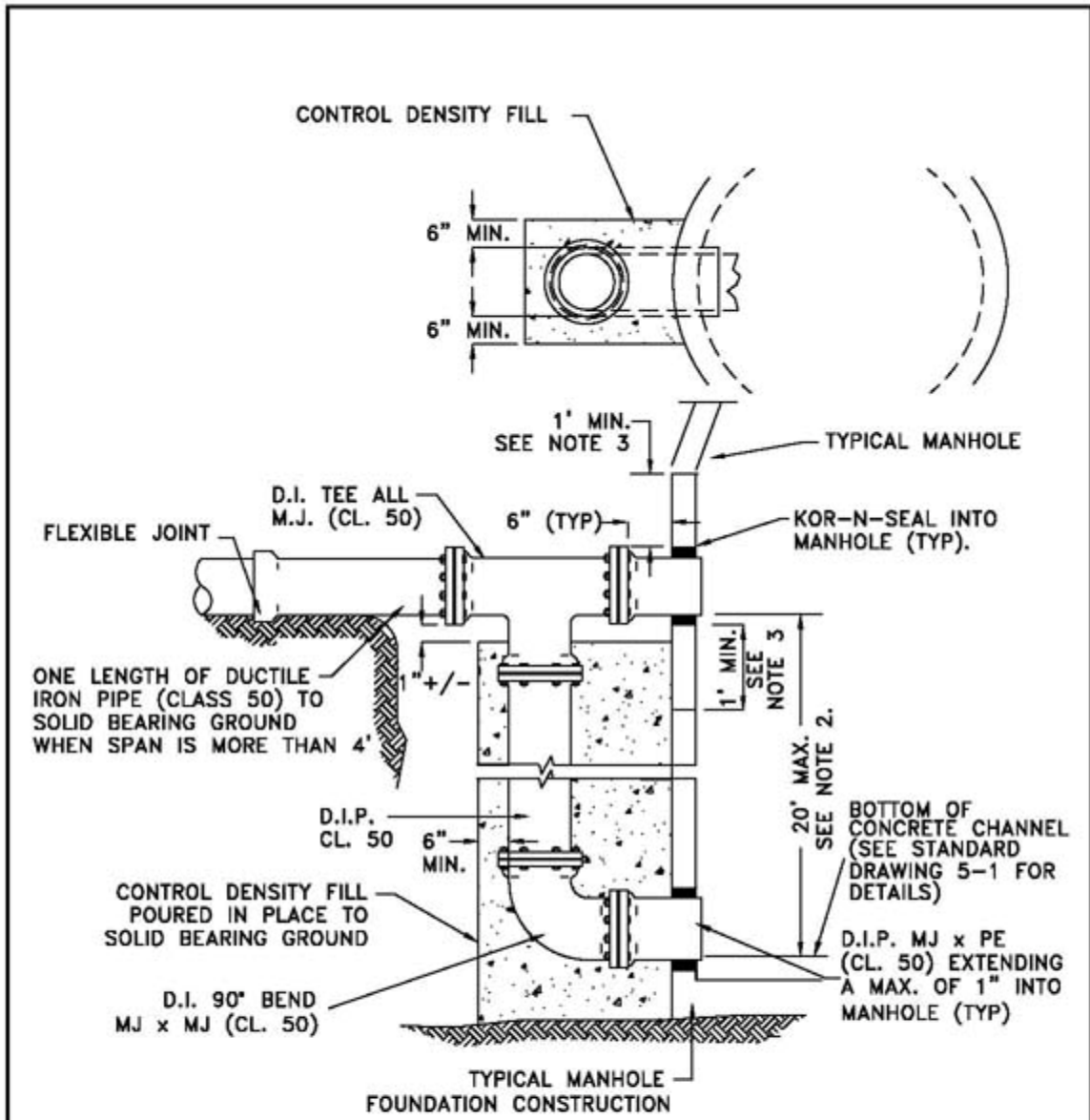


**NOTES:**

1. ON MANHOLE OUTSIDE ASPHALT ADD REINFORCING STEEL AS SHOWN ABOVE. DEFORMED BAR TO MEET ASTM A615 GRADE 60 FY=60,000 P.S.I.
2. SINGLE OPENING IN LID FOR USE OF MANHOLE HOOK IS REQUIRED.
3. JOINTS BETWEEN EACH ADJUSTMENT RING INCLUDING WHERE FRAME & MH CONE MEET RINGS, SHALL INCLUDE ACTIVATED OAKUM OR APPROVED EQUAL.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>MANHOLE COLLAR</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	<b>5-3</b>
CITY ENGINEER	REVISED DATE
	<b>1/02/2003</b>



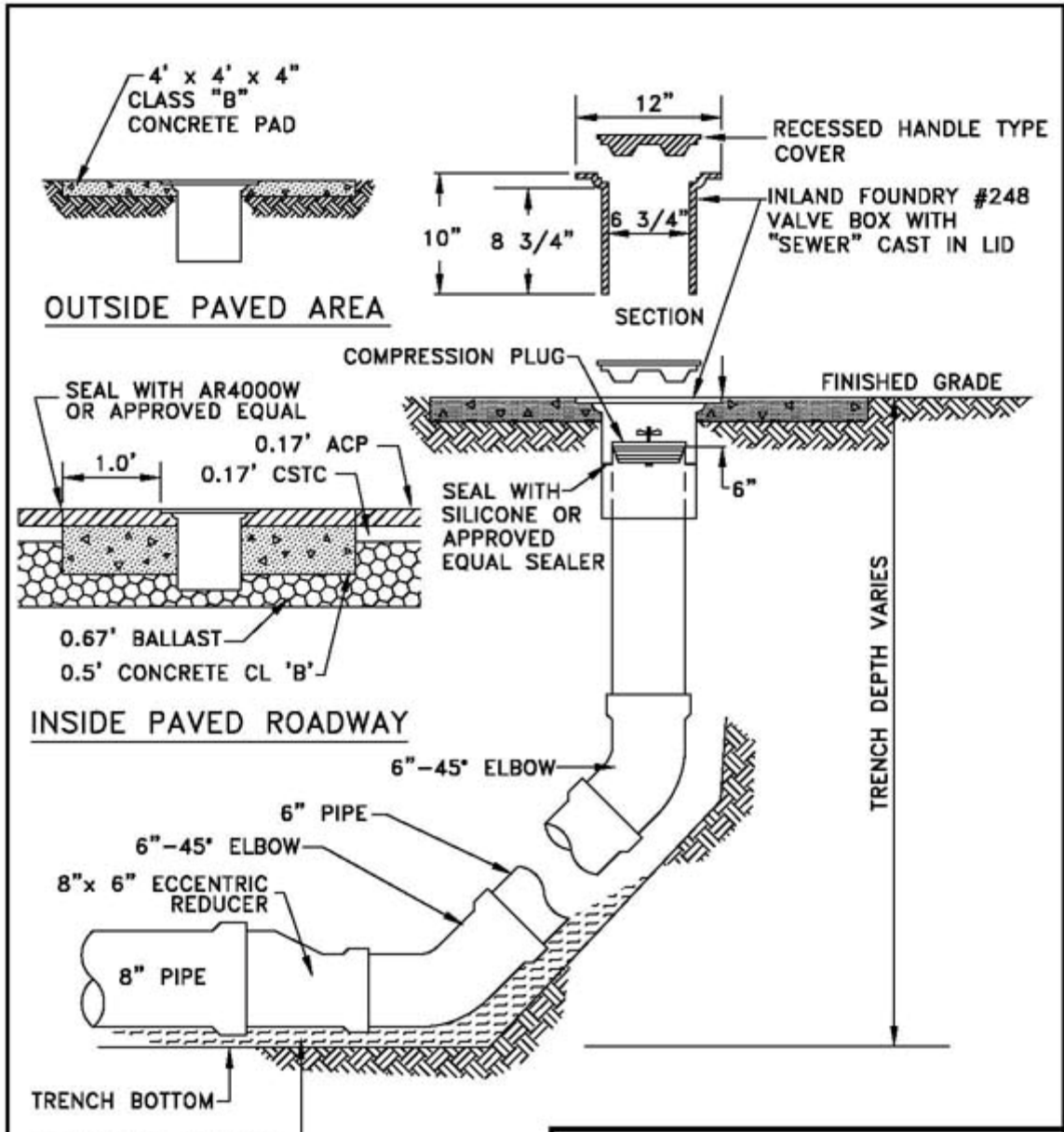
**NOTES:**

1. THE INTERIOR OF ALL DUCTILE IRON SHALL BE COATED WITH EPOXY OR TNEC 66.
2. DEPTHS OVER 20' MAY BE ALLOWED IF MEGA-LUG JOINTS ARE USED.
3. MAINTAIN A MINIMUM OF 1' BETWEEN MANHOLE JOINTS AND TEE.
4. MINIMUM PIPE SIZE = 8".

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>DROP CONNECTION</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	5-4
CITY ENGINEER	REVISED DATE
	1/02/2003



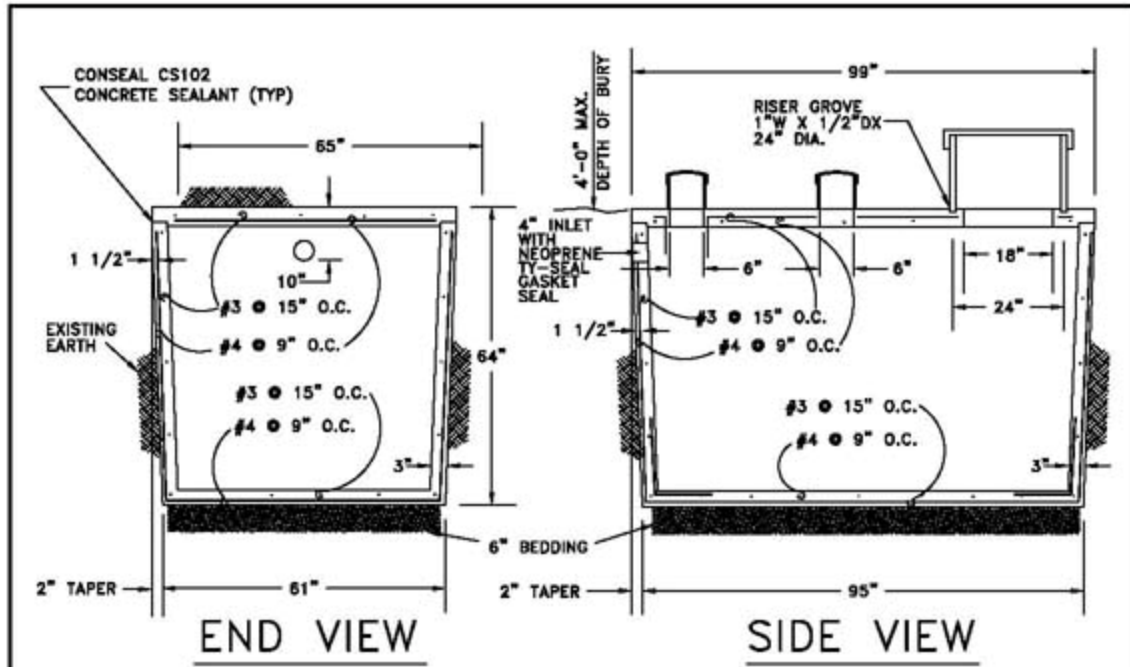


**NOTES:**

1. ALL SEWER PIPE SHALL BE ASTM 3034 SDR 35.
2. SILICONE SEALANT SHALL NOT INTERFERE WITH REMOVAL OF THE PLUG.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>CLEANOUT</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	5-5
CITY ENGINEER	REVISED DATE
	1/02/2003



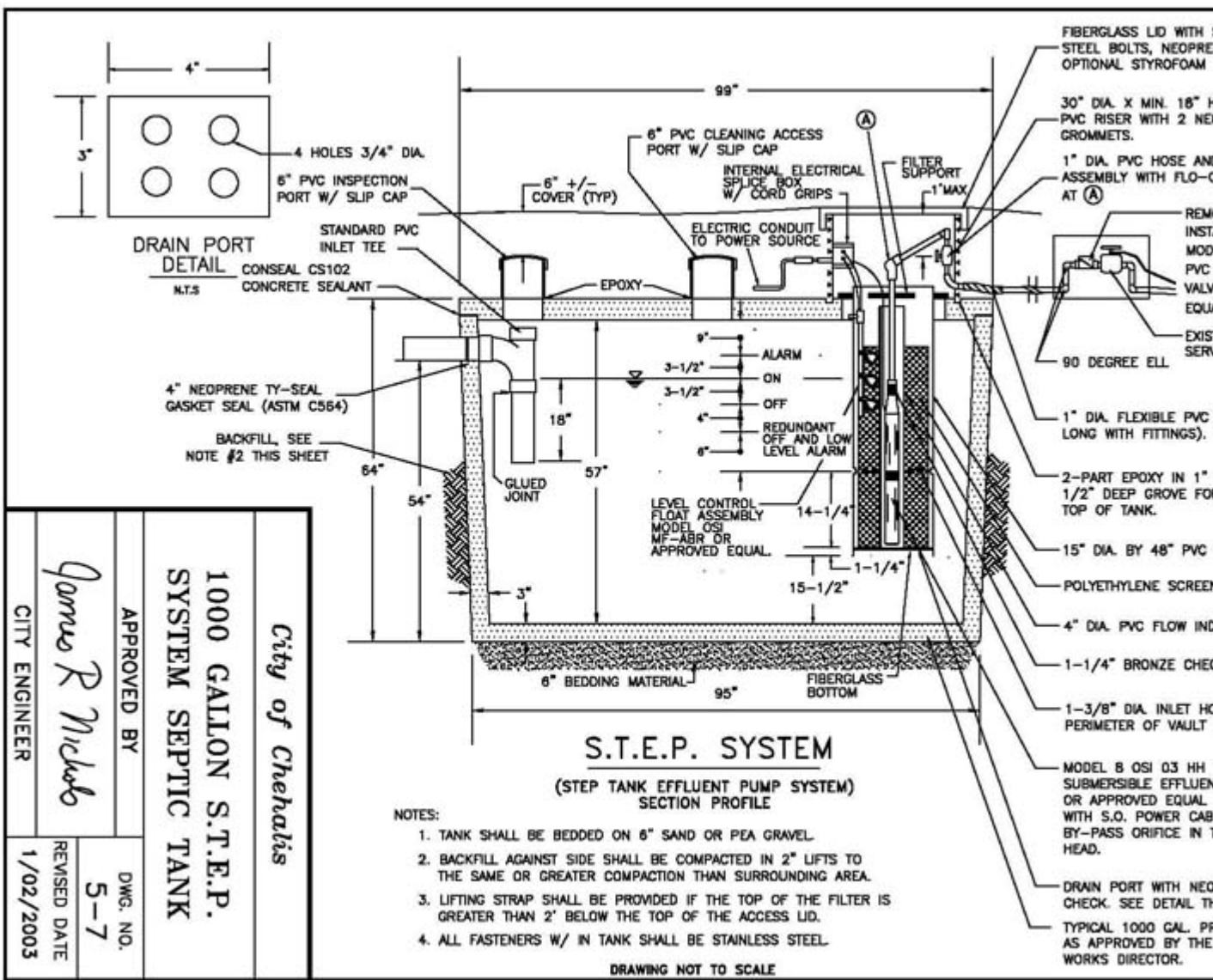
**GENERAL NOTES:**

1. USE PRECAST TANK AS APPROVED BY THE PUBLIC WORKS DIRECTOR.
2. REINFORCING STEEL: DEFORMED BAR ASTM A615 GRADE 60 FY=60,000 P.S.I.
3. CONCRETE: F'C=5000 P.S.I. COMPRESSIVE STRENGTH @ 28 DAY TEST. MAX. AGGREGATE SIZE 3/4"
4. LOADING:
  - TOP SLAB:
    - 1000 P.S.F. WHEEL LOAD
    - 400 P.S.F. SOIL LOAD
  - LATERAL LOAD:
    - 62.4 P.C.F. HYDROSTATIC
  - SOIL BEARING:
    - 1000 P.S.F. ASSUMED
5. THIS TANK IS NOT DESIGNED TO WITHSTAND AN H-20 LIVE LOAD.
6. SEE SECTION 5E.07 FOR SPECIFIC DETAILS ON TANK DESIGN.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>1000 GALLON S.T.E.P. SYSTEM SEPTIC TANK</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	<b>5-6</b>
CITY ENGINEER	REVISED DATE
	1/02/2003





*City of Chehalis*

**1000 GALLON S.T.E.P.  
SYSTEM SEPTIC TANK**

APPROVED BY

*James R. Nichols*

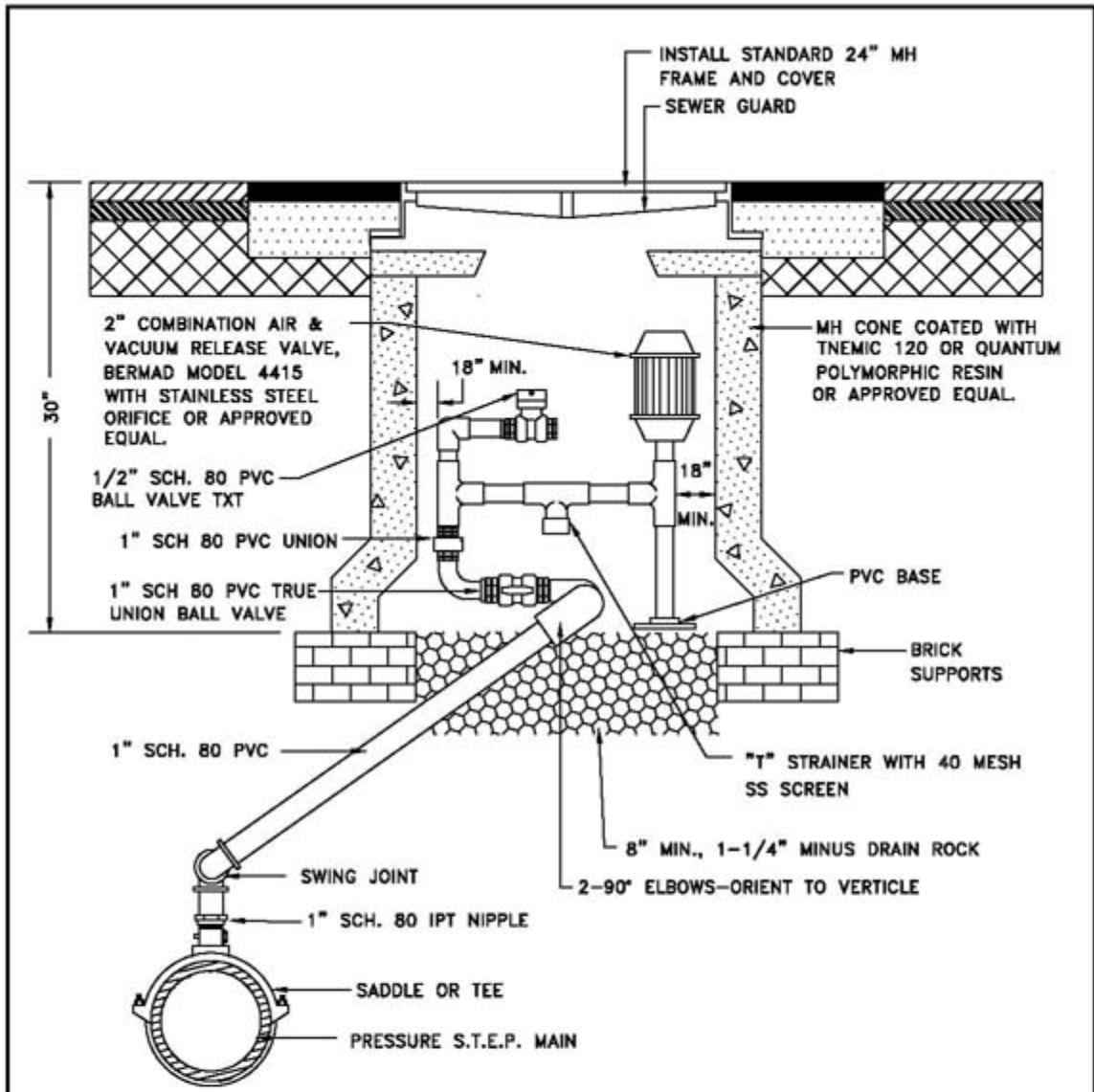
CITY ENGINEER

DWG. NO.  
**5-7**

REVISED DATE  
**1/02/2003**

- NOTES:
1. TANK SHALL BE BEDDED ON 6" SAND OR PEA GRAVEL.
  2. BACKFILL AGAINST SIDE SHALL BE COMPACTED IN 2" LIFTS TO THE SAME OR GREATER COMPACTION THAN SURROUNDING AREA.
  3. LIFTING STRAP SHALL BE PROVIDED IF THE TOP OF THE FILTER IS GREATER THAN 2' BELOW THE TOP OF THE ACCESS LID.
  4. ALL FASTENERS W/ IN TANK SHALL BE STAINLESS STEEL.

DRAWING NOT TO SCALE



NOTES:

1. LOCATE AIR RELEASE ASSEMBLY IN SIDEWALK WHEN POSSIBLE.
2. ALL FASTENERS SHALL BE STAINLESS STEEL.

DRAWING NOT TO SCALE

*City of Chehalis*

**S.T.E.P. SYSTEM AIR  
RELEASE ASSEMBLY**

APPROVED BY

*James R Nichols*

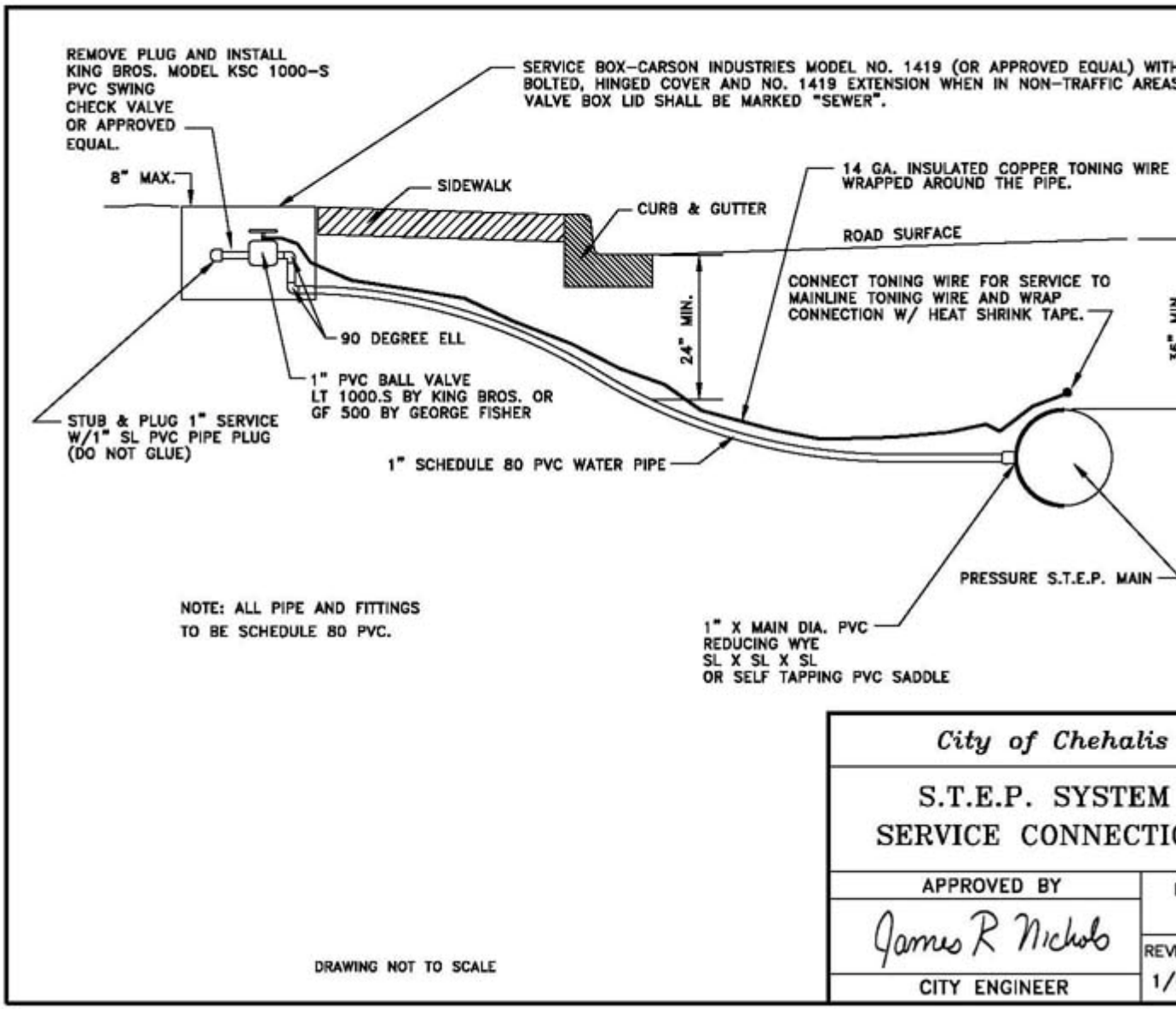
CITY ENGINEER

DWG. NO.

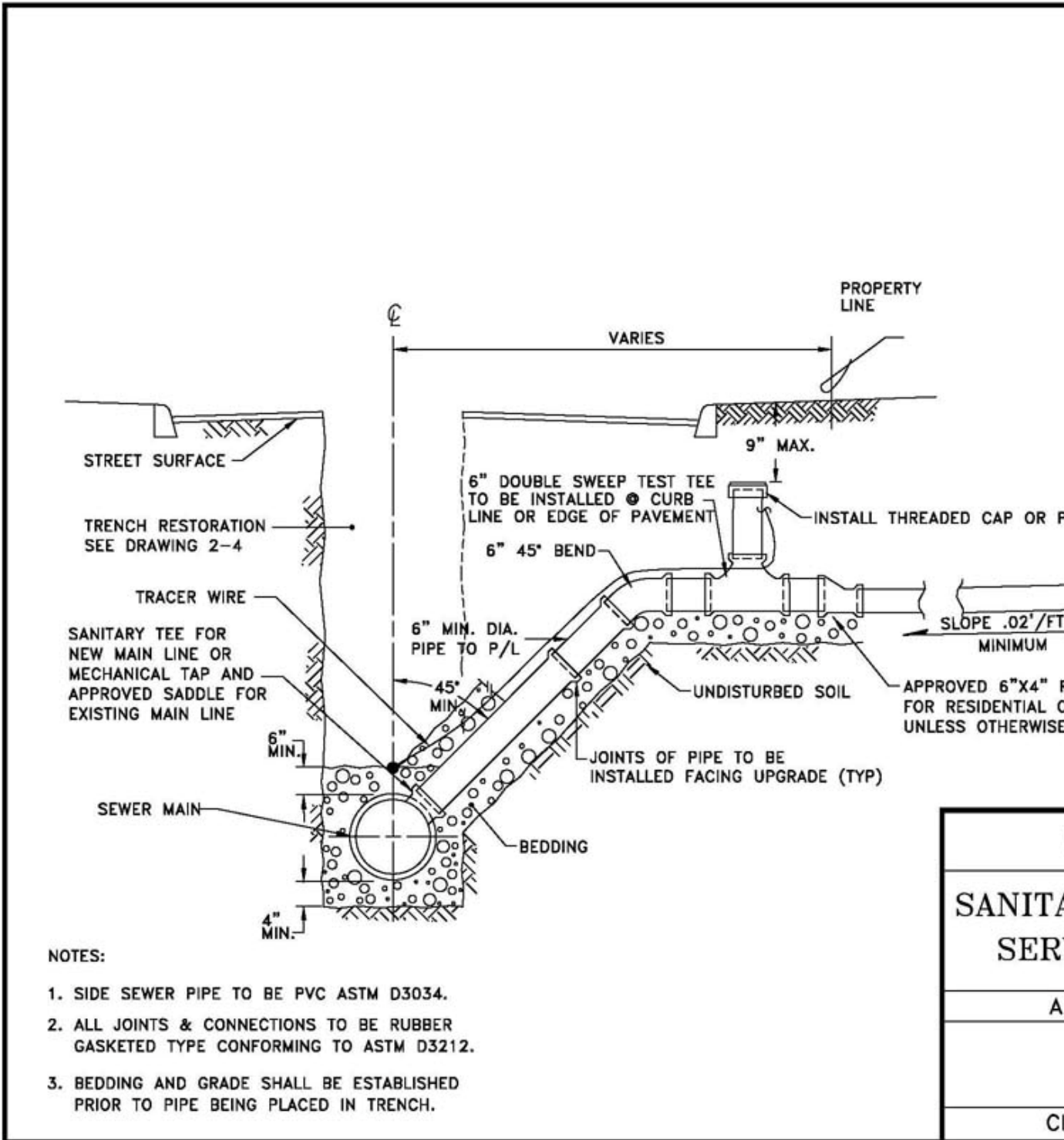
5-8

REVISED DATE

1/02/2003



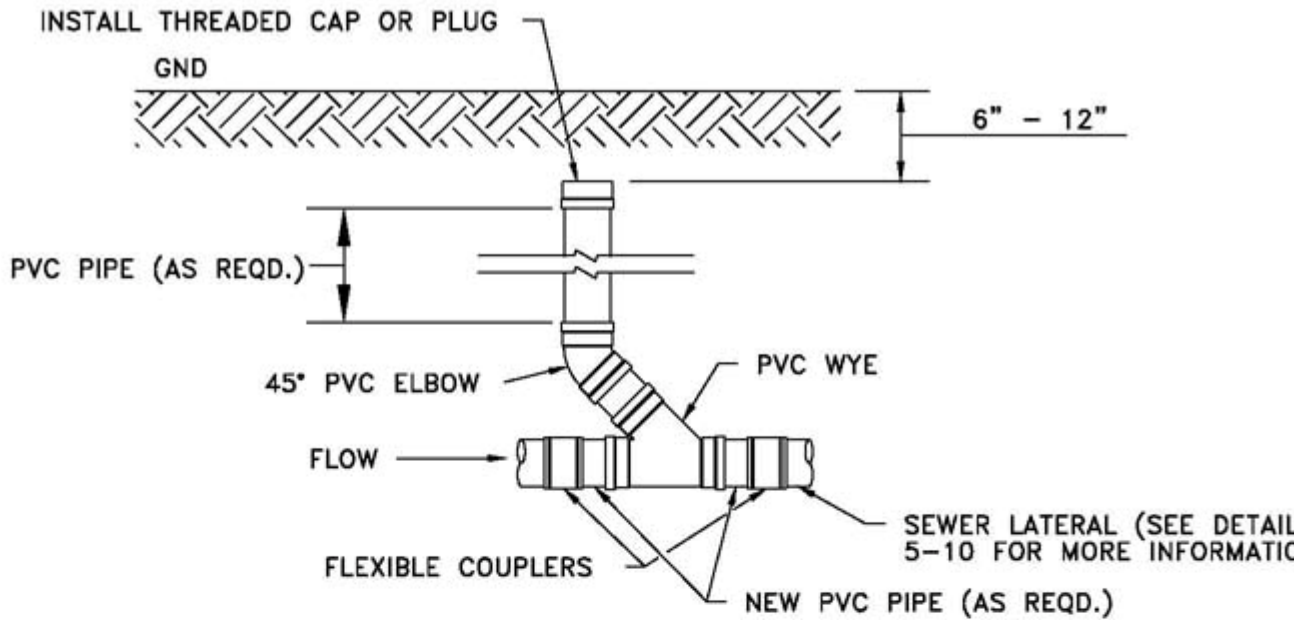
<i>City of Chehalis</i>	
<b>S.T.E.P. SYSTEM SERVICE CONNECTION</b>	
APPROVED BY	
<i>James R Nichols</i>	
CITY ENGINEER	
REV	1/



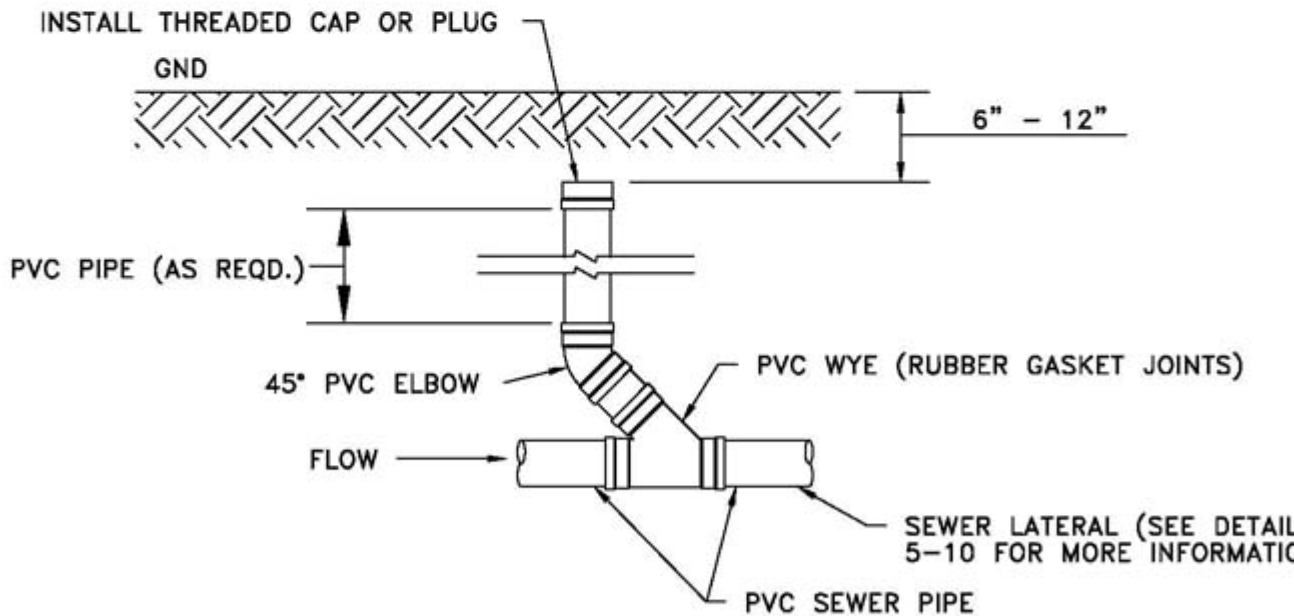
[Ord. 819B § 18, 2007.]

**5-11 Side Sewer Cleanout**





CLEANOUT DIAGRAM FOR RETROFITTING EXISTING SERVICE



CLEANOUT DIAGRAM  
FOR NEW SERVICES

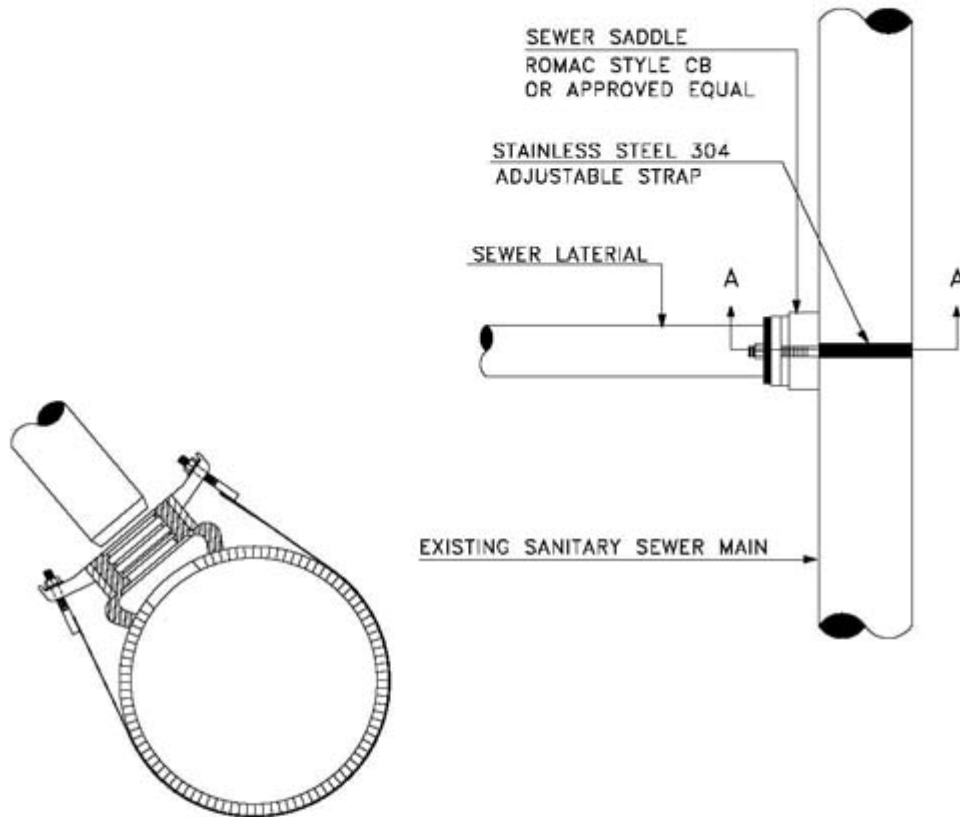
NOTES:

1. ALL JOINT CONNECTIONS SHALL BE RUBBER GASKETED.

*City of Chehalis*

**SIDE SEWER  
CLEANOUT**

[Ord. 819B § 18, 2007.]



SECTION A-A

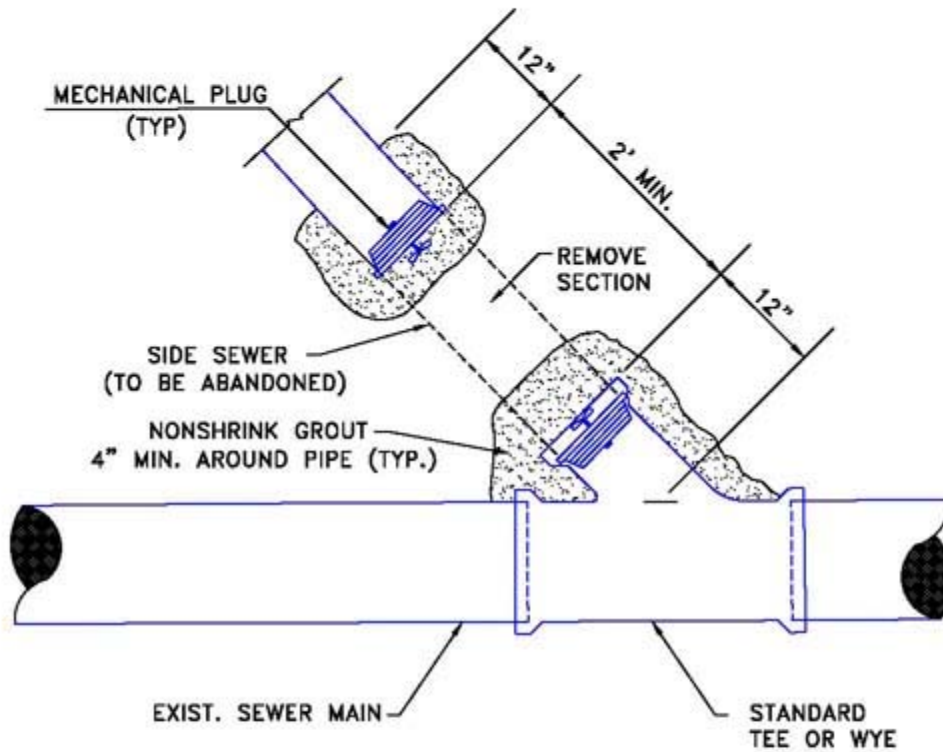
NOTES:

1. BOLTS, NUTS, WASHERS, AND 1/2" N.C. ROLL THREAD ARE TO BE TEFLON COATED.
2. THE STAINLESS BAND SHALL BE 3 1/2" MINIMUM WIDTH.
3. EXCESS STRAP GOES BETWEEN PIPE AND BAND.
4. ALL FASTENERS ARE TO BE STAINLESS STEEL.
5. PIPE MUST BE CORED (DRILLED) WITH A HOLE SAW OF APPROVED DIAMETER. CORE HOLE MUST BE INSPECTED AND APPROVED.

DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>SANITARY SEWER SADDLE TAP</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	5-12
CITY ENGINEER	REVISED DATE
	1/02/2003





NOTE:  
THIS DETAIL SHALL APPLY TO SIDE SEWERS WHICH ARE TO BE ABANDONED.

DRAWING NOT TO SCALE

*City of Chehalis*

**SIDE SEWER  
PLUG**

APPROVED BY

*James R Nichols*

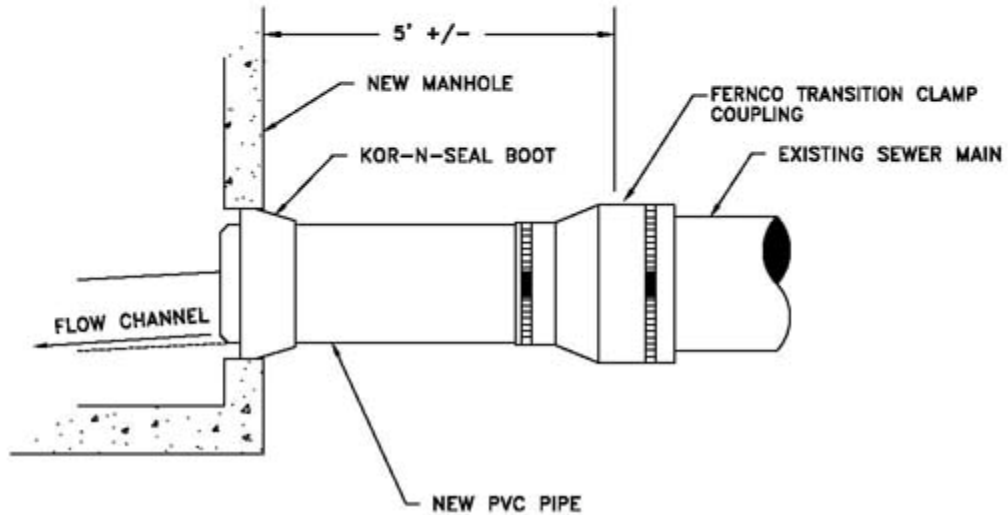
CITY ENGINEER

DWG. NO.

5-13

REVISED DATE

1/02/2003



**NOTES:**

1. ALL FASTENERS & CLAMPS ARE TO BE STAINLESS STEEL.
2. NEW SECTION OF PIPE IS TO BE INSTALLED AT APPROXIMATELY THE SAME SLOPE AS THE EXISTING LINE.
3. AVOID CREATING "BELLIES" OR "SAGS" WITH THE NEW SECTION OF LINE.

DRAWING NOT TO SCALE

*City of Chehalis*

**SEWER MAIN  
CONNECTION**

APPROVED BY

*James R Nichols*

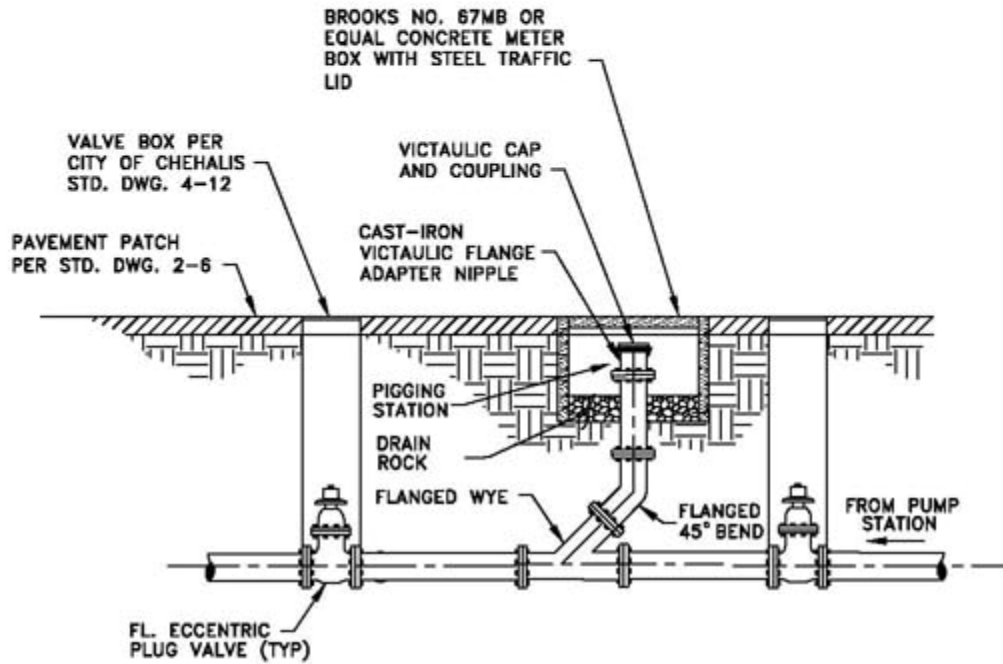
CITY ENGINEER

DWG. NO.

5-14

REVISED DATE

1/02/2003



DRAWING NOT TO SCALE

<i>City of Chehalis</i>	
<b>PIG PORT</b>	
APPROVED BY	DWG. NO.
<i>James R Nichols</i>	5-15
CITY ENGINEER	REVISED DATE
	1/02/2003

Code reviser's note: For statutory provisions authorizing cities to adopt any printed code or compilation by reference, see RCW 35.21.180; for similar provisions relating to code cities, see RCW 35A.12.140.

**Appendix J**  
**Water Shortage Response Plan**

**City of Chehalis**  
**Water Shortage Response Plan**

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**APPENDICES**

- A. Matrix of Shortage Response Actions
- B. Irrigation Response for City of Chehalis Managed Sites
- C. Contract List
- D. Voluntary Customer Water Use Reduction Actions
- E. Enforcement Procedural Checklist
- F. Fire Department WSRP Responses



## **OVERVIEW**

### **WATER SUPPLY SYSTEM**

The City obtains its drinking water from the Newaukum and Chehalis Rivers. Water is captured at the Newaukum River intake and flows by gravity through 17.5 miles of pipeline to the water treatment plant. Water is captured at the Chehalis River intake and is pumped through 8,000 feet of pipeline to the water treatment plant. All water is treated and chlorinated prior to being served to the customers.

The City of Chehalis owns and operates a water system serving customers within its City limits and with the urbanizing area of Lewis County. The focus of this report is to evaluate the City's water system and provide recommendations needed to respond to and avoid water shortages now and in the future.

The City has, over time, continued to upgrade and replace its original facilities. The Newaukum River provides the majority of the City's supply and is augmented with water from the Chehalis River intake. All water is treated at the City's filter plant and chlorinated prior to reaching any customer. The water system provides a good degree of reliability and is an efficiently operated and maintained system. This Water Shortage Response Plan (WSRP) addresses measures intended to meet water demands now and in the future.

### **PURPOSE OF STUDY**

The purpose of this document is to help the City develop short-term water shortage response plans. Water system planning, as required by WAC 246-290-100, provides the framework for making key water supply management decisions. The WSRP outlines the actions required to reduce water usage and water demand in the event of a water shortage, and to provide information to citizens and businesses. This document is to provide a plan to management and personnel for the duration of the drought or emergency.

### **CAUSES OF WATER SHORTAGES**

A water shortage can be any situation in which water supply is inadequate to meet demand. Potential causes of water shortages are:

- Drought
- Water contamination
- Inadequate planning to meet demand
- Inadequate or failed equipment
- Water waste
- Water outage due to loss of power or major service disruption

The frequency or cause of a water shortage may indicate the best way to overcome it. Droughts are temporary, but often reoccur. Thus, depending upon drought frequency, a solution to the problems created by drought may be reducing demand or augmenting supply. Water contamination can put a water supply out of commission permanently. In this case, a new source

of supply maybe warranted. To eliminate a water shortage caused by inadequate planning or equipment, consideration to design and capital improvements are necessary. To eliminate shortages resulting solely from increased demand for water resources, long-term resource management is required. This plan provides the framework to continue to ensure an adequate water supply while the permanent solution is developed.

This Plan has been prepared to conform to the guidelines developed by the Office of Drinking Water (ODW) of the Environmental Health Division of the State Department of Health (DOH).

## **DROUGHT**

According to the National Drought Mitigation Center, drought is inevitable and is a normal part of virtually every climate on the planet, even rainy ones. Certainly, this is the case in Chehalis, Washington. While the 30 year average indicates that Chehalis receives about 47 inches of rain every year, only two inches total fall in July and August. This is our "normal predictable" weather pattern and our Water System Plan, Water Conservation Program and operations procedures addresses water use during normal periods.

The City of Chehalis' water system relies on rainfall to recharge the aquifers that feed the Newaukum and Chehalis Rivers. The City projects the amount of water our customers will consume based on historical usage and demand forecasting models. Highly unusual weather events can affect this relatively predictable cycle.

These weather events fall into two categories. The first is less than average fall/winter precipitation. The City depends on winter rains to recharge our aquifers. Since Chehalis' water sources rely on relatively shallow aquifers, they would likely experience an almost immediate reduction in water supply following a dry winter.

The second weather pattern that could cause a potential water shortage is a summer of sustained higher than normal temperatures and lower than normal precipitation. Both of these conditions can contribute to above-average demand and put a strain on the City's water supplies.

## **SYSTEM EMERGENCIES**

System operating emergencies are, in most cases, not predictable. Emergencies may consist of failures of pumps, transmission lines, reservoir, treatment plant or contamination.

The specific cause of any supply disruption will dictate the City's response and it timing. Any major loss or reduction in the water source will require the City of Chehalis to implement the Water Shortage Response Plan (WSRP).

## **CONSERVATION vs. CURTAILMENT**

There are important differences between a long-term conservation program and curtailment actions. Chehalis has a water conservation program in place. The program targets both indoor and outdoor water use for all our customers.

In contrast, curtailment is designed to quickly reduce water usage. It is relatively short-termed and usually involves perceived "hardships" for the customers. It generally involves mandatory measures.

The focus of the public message and information strategy is different for each program. The long-term conservation message of environmental stewardship, water use efficiency, and saving money shifts during water supply shortage situations to a more personal message such as, "If everyone participates and cuts back, we will have enough water for your essential needs."

## **BACKGROUND**

### **WATER SHORTAGE RESPONSE TEAM**

When a **potential** water shortage is identified, the Water Shortage Response Team (WSRT) would be convened to consider whether this plan should be implemented. The team is comprised of the following staff:

- Water Superintendent (Chair Person)
- Water Treatment Plant Operator
- Public Works Director
- Public Works Office Manager (Information Officer)

The team would recommend the level of implementation and specific response actions, subject to review by the City Manager.

A variety of factors would form the basis of these decisions, including:

### **WATER SUPPLY FACTORS**

- Total water supply available, including interties.
- Operational conditions of Newaukum and Chehalis Intakes, transmission lines, reservoirs and treatment plant.
- The rate of decline in river levels compared with the normal operating levels.
- Amount of time required to implement a supply-enhancement measure.
- Weather conditions based on both short-term and long-term weather forecasts and modeling by the National Weather Service.

### **WATER DEMAND FACTORS**

- Historical and current trends and seasonal forecasts for the system's daily water demands.
- The estimated margin of safety provided by the demand reduction compared with the level of risk assumed if no action is taken.
- Amount of time required to implement the water use reduction measures.
- Amount of expected savings provided by a water use reduction measure.

## **OTHER FACTORS**

- The amount of lost water revenue compared with the increase margin of supply reliability.
- Consultation with elected officials, state resource agencies, the county, interested organizations.
- Amount of time lag between implementation of a measure and water use reduction.
- Ultimate cost to City customers.
- Equity in demand reduction between customer classes.
- Impact to local economy.
- Current events.
- Action taken by neighboring jurisdictions, which influence or directly affect City customers.
- Environmental benefits.

## **WATER SHORTAGE RESPONSE**

### **FOUR STAGES OF WATER SHORTAGE RESPONSE**

The Water Shortage Response Plan (WSRP) includes four stages of response. The stages include:

- I. Advisory
- II. Voluntary
- III. Mandatory
- IV. Emergency Curtailment

As the water shortage conditions become more serious, the City would implement the higher levels of response. Each has progressively more stringent requirements to coincide with conditions of increasing severity. Appendix A contains a matrix that provides an overview of possible management actions and the levels at which they would most likely be implemented.

At the Advisory Stage, customers would be informed as early as meaningful data is available that water supply and demand conditions may result in a less than normal supply of water. If the supply and demand situation predicted at the Advisory Stage develops, the City would move to the Voluntary Stage, which relies on the voluntary cooperation and support of customers to meet water use reduction goals. If the voluntary measures do not provide the necessary reduction in water use, the Mandatory Stage would be implemented. The Emergency Curtailment Stage would only be used when extraordinary levels of reductions are required to ensure that demand does not exceed supply and that public health and safety are not compromised.

Following is a detailed discussion of the four stages, including objectives, triggers, public messages, internal operating actions, communication actions, and supply and demand actions.

## **ADVISORY STAGE**

### Objectives

- Prepare City staff, relevant agencies, and water users for a potential water shortage, thereby allowing all parties adequate time for planning and coordination.
- Undertake supply management actions that forestall or minimize the need for more stringent demand or supply management actions later on.

### Triggers

There are a variety of conditions that may cause concern about water availability and signal a potential water shortage. Conditions that may trigger the Advisory Stage include but are not limited to the following:

- The Newaukum and Chehalis River flows are normally at their lowest in September/October. When river or aquifer levels are below historical low levels, staff would continue monitoring river levels and begin monitoring precipitation and analyzing all available data. If river level do not come up to historical levels and precipitation continues to be below normal, The City would declare an Advisory Stage in March.
- River levels that are significantly below historical norms for the current time of year and data indicates that expected demands may not be met if this trend worsens or continue.
- Lower than normal winter precipitation.
- Major equipment out of service which lowers source production (water treatment train, pump at the Chehalis River intake, transmission line from either source) which require long lead times for equipment replacement or require extensive reconstruction to bring back into service.

The Advisory Stage may be discontinued when water supply conditions return to normal.

### Public Message

*"The potential exists for lower than normal water supply. Customers may be asked to reduce consumption unless conditions return to normal. Please use water wisely. We will keep you informed"*

### City of Chehalis Internal Operating Actions

1. Convene the City's Water Shortage Response Team (WSRT) to evaluate conditions, determine actions, and assign tasks.
2. Intensify communication with all City staff so they can communicate our message clearly to concerned customers.
3. Intensify data collection for all source and treatment meter records, tank level records, monitoring river level and any aquifer information, and weather conditions.

4. Assess current water main flushing activities to determine whether they should be accelerated so they are completed prior to peak usage periods or reduced to conserve supply.
5. Assess water quality in the distributions system to target areas that may experience degradation with reduced consumption.
6. Develop a list of critical water uses and users.
7. Reduce watering of City owned and managed landscapes. Reduce or eliminate seasonal plantings. Appendix B contains a list of recommendations regarding irrigation water use reduction steps in City managed landscapes.
8. Initiate planning and preparation for Voluntary Stage actions, including assessment

### Communication Actions

1. Brief City Department Heads, City Manager, City Council, and all City staff members.
2. Consult with and provide status reports to state resource agencies, interest groups, and Chehalis Basin Partnership. Specific entities include Lewis County, City of Centralia, State Department of Health, interested environmental and community organizations and large commercial customers.
3. Develop a status report for customers/businesses with special interests, such as landscape, nursery industry and developers.
4. Develop and distribute public outreach and education materials explaining the water shortage response stages and expected ranges of actions through a variety of communication channels (i.e., print and radio media, City website, direct mail, etc.). Post updated status reports on the City's website and through other communication channels. Prepare information for customers, including developers, who may be planning new landscaping.

## **VOLUNTARY STAGE**

### Objectives

The objectives of the Voluntary Stage are to:

- Inform City water customers of a water shortage and the need to reduce water use and eliminate water waste.
- Reduce water use to meet consumption goals through voluntary customer actions.
- Forestall or minimize the need for more stringent demand or supply management actions.
- Minimize the disruption to customers while meeting consumption goals.
- Maintain the highest water quality standards throughout the shortage.

### Triggers

- River flows and aquifer levels continue to be low.
- Rainfall is significantly less than normal by February 1.

- The summer is predicted to be hot and dry.
- Water use demand projections indicate a systematic response to reducing demand is required.

### Public Message

*"We are relying on the support and cooperation of **all** water users to reduce consumption and stretch the available water supply. Water use needs to be reduced by \_\_\_ percent, approximately \_\_\_ gallons per household per day. Customers are responsible for determining how they will meet that goal. Water waste is not allowed. If everyone cooperates, more stringent restriction may be avoided. In addition to meeting essential water needs of customers, the needs of fish habitat and other environmental concerns is a priority"*

### City of Chehalis Internal Operating Actions

1. Continue Advisory Stage actions.
2. WSRT to prepare weekly reports for distribution to staff and local media on supply conditions and consumption levels.
3. WSRT will consider the current and projected supply conditions and seasonal demand and set consumption goals that may be revised as necessary.
4. Reduce all operating system water uses to essential levels.
5. Reduce irrigation at City-owned and managed landscapes. Reduce or eliminate seasonal plantings (Appendix B).
6. Reduce washing of City fleet vehicles; request that City departments bring fleet vehicles to commercial car washes that recycle water.
7. Eliminate hosing of sidewalks, driveways, parking lots, etc., at City facilities except in situations where it is necessary for public health and safety.
8. Activate existing emergency intertie, if available, as necessary to increase emergency supply availability.
9. Increase water quality monitoring actions as necessary.
10. WSRT will evaluate whether target consumption levels and supply conditions warrant a rate surcharge to reinforce voluntary actions and/or to recover revenue losses. The WSR T would make recommendations to the City Manger for action by the City Council.
11. Implement staffing reassignments as needed and plan staffing changes that may be needed for the Mandatory Stage, including staff to enforce mandatory restrictions.

### Communication Actions

1. WSRT would establish systematic communications with City Department Heads, City Manager, City Council, including the suggested nature and scope of the voluntary measures and strategies.
2. Consult with and provide status reports to state resource agencies, interest groups, and Chehalis Basin Partnership. Specific entities include Lewis County, City of Centralia, State

Department of Health, interested environmental and community organizations and large commercial customers. Post updated status reports on the City website.

3. Develop and implement a comprehensive public awareness and education campaign with the goal of keeping customers informed about supply and demand conditions. This campaign will recommend customer actions to significantly reduce demand, reinforce desired customer actions, and remind customers that if goals are not achieved, mandatory restrictions may be necessary. The campaign may include press releases to the local print media and radio stations, publishing in the Daily Chronicle and the City website a list of recommended actions for customers to take to reduce their water consumption, a direct mailing to all City customers with a list of the recommended actions and other appropriate strategies.
4. Promote consumption goals for typical households and a percentage reduction goal for commercial customers.
5. Prepare a current list of commercial car washes in Chehalis that recycle water.
6. Contact the City's largest water users and request a percentage reduction. Contact other public agencies to inform them of conditions and request their cooperation.
7. Identify customers with large irrigation accounts and promote use of daily weather information, such as rainfall and reduced evapotranspiration (ET) rates to minimize irrigation uses. Provide current ET rates on City's website.
8. Provide water quality information in public information so that if flushing is necessary, the public understands that it is essential for water quality maintenance.
9. Initiate remaining planning and preparation for the Mandatory Stage.
10. Establish and promote "hotlines" for customers to obtain additional water conservation information.
11. Establish regular communication with Public Works Department and City employees, especially staff that has regular contact with the public, such as Utility Billing representative, meter readers, and Water Section crew. Keep them up to date on conditions, goals, and City actions so they can provide accurate information to customers.

#### Supply & Demand Management Action

1. Assigned staff will "tag" observed obvious water waste, such as hoses without shutoff nozzles, irrigating during the heat of the day, excessive water running into storm drains, etc., with a Water Waste Notice that informs the customer about supply conditions and the need to reduce water waste.
2. Evaluate the ability to accelerate or enhance long-term conservation programs and implement as appropriate.
3. Request state, county, and private organizations eliminate washing of fleet vehicles except at commercial car washes that use recycled water.



Voluntary customer actions are included in Appendix D.

## **MANDATORY STAGE**

### Objectives

The objectives of the Mandatory Stage are to:

- Achieve targeted consumption reduction goals by restricting defined water uses.
- Ensure that an adequate water supply will be available during the duration of the water shortage to protect public health and safety.
- Minimize the disruption to customers' lives and businesses while meeting target consumption goals.
- Promote equity among customers' by establishing clear restrictions that affect all customers equally.

### Triggers

The Mandatory Stage would be implemented when:

- The City loses either of its sources due to decreased river level. The City would remain at the Mandatory Stage until this source comes back on line.
- The current water supply would not be able to meet demand projections
- Measures implemented in the Voluntary Stage are not adequately reducing demand.
- The time available to implement measures to reduce water use is not sufficient to allow education of customers required for voluntary compliance.
- It is evident the level of water use reduction required would not be achieved through voluntary compliance.

### Public Message

*"We are imposing mandatory restrictions to reduce demand because the voluntary approach is not resulting in necessary water use reductions. We are continuing to rely on the support and cooperation of our customers to reduce water use. However, we need the certainty and predictability of restricting certain water uses. This way, we can ensure that an adequate supply of water is available for public health and safety throughout this shortage. "*

### City of Chehalis Internal Operating Actions

1. Continue actions from Advisory and Voluntary Stages, as appropriate.
2. The WSRT would develop a list of recommended water use restrictions and exemptions from restrictions.

3. The WSRT would finalize and implement a process for receiving, recording, and responding to reported violations of restrictions.
4. The WSRT would make recommendations to move to the Mandatory Stage and develop mandatory restrictions, emergency surcharges, and fees, subject to the City Managers approval, to present to the City Council for consideration. The WSRT would recommend the nature, scope, and timing of restrictions.
5. Work with City of Chehalis Parks Maintenance Supervisor to restrict irrigation levels in park areas to levels that meet or exceed the irrigation restrictions while maintaining public safety (Appendix B).
6. The WSRT would finalize and implement enforcement procedures and assess fines where mandatory restrictions are not followed (Appendix E). The WSRT would review and process all requests for exemptions from mandatory requirements.
7. Work with the City of Chehalis and District Fire Departments to ensure that they are complying with mandatory restrictions (Appendix F)
8. Initiate planning and preparation for the Emergency Curtailment Stage.

#### Communication Actions

1. WSRT will provide periodic reports to the City Department Heads, City Manager, City Council, including the suggested nature and scope of the mandatory restrictions, implementation strategies, and customer response data.
2. Consult with and provide status reports to state resource agencies, interest groups, and Chehalis Basin Partnership. Specific entities include Lewis County, City of Centralia, State Department of Health, interested environmental and community organizations and large commercial customers. Post updated status reports on the City website.
3. Through a media campaign and direct mail communicate:
  - Scope and nature of mandatory restrictions.
  - Reason for imposing the restrictions.
  - Consumption goals and ways in which to achieve those goals.
  - Additional restrictions that may be imposed if water use reduction goals are not achieved.
  - Enforcement mechanisms and fines.
  - Rate Surcharges
  - Projections for how long restrictions will be in place.
4. In communicating mandatory restrictions to the public, a clear distinction will be made between lawn/turf watering and watering gardens and ornamental plantings. The type and amount of watering will be clearly defined.

5. Any exemption from water use restrictions will be clearly identified.
6. Contact irrigation customers and inform them that the City may shut down their irrigation meters in the event of an immediate water shortage situation.
7. Provide area landscape management and property management companies with water use restriction information.
8. Restrict hydrant usage to essential purposes, including recall of hydrant permits previously issued. This should include contacting each registered hydrant user. Require the use of best management practices (BMPs) to reduce water use, meet operational needs, and provide for dust control. If an alternate source of water is available, all hydrant permits may be rescinded.
9. Post updated status reports on the City website.
10. Establish a "Customer Hotline" for residents to report violations of restrictions.
11. Continue and enhance communications actions from the Advisory and Voluntary Stages.
12. Work with the City and County's Community Planning and Development Departments to defer landscape installation requirements until the shortage is over. **No exemptions will be allowed for watering new lawn installations.**
13. Advise Fire Departments to discontinue the use of water in training exercises until the emergency is over.
14. Evaluate resources and plans for moving into the Emergency Curtailment Stage. As appropriate, begin preparatory measures.

#### Supply & Demand Management Actions

The WSRT will review, evaluate, and recommend possible restrictions to the City Manager for authorization by the City Council.

The following is a list of possible watering restrictions. The nature of the restrictions actually used will depend on the situation, and may change as the severity of the situation changes.

1. Prohibit all watering during the warmest hours of the day, for example between 9:00 a.m. and 7:00 p.m.
2. Limit all watering to a specific number of days per week or per month. The option chosen will depend on target consumption goals, the time of year and the extent to which watering is occurring, and how much demands have already decreased.
3. Ban lawn watering, with other landscape watering prohibited during the warmest hours of the day-for example, between 9:00 a.m. and 7:00 p.m.
4. Prohibit use of any ornamental fountain using drinking water for operation or makeup water.
5. Prohibit car washing except at commercial car wash facilities that recycle water.
6. Prohibit washing of sidewalks, streets, decks or driveway except as necessary for public health and safety.

7. Limit pressure washing of buildings to situation that require it as part of a scheduled building rehabilitation project (i.e., painting).
8. Prohibit water waste, including untended hoses without shut-off nozzles, obvious leaks, and water running to waste, such as gutter flooding, and sprinklers/irrigation whose spray pattern unnecessarily and significantly hits paved areas.
9. If an alternate source of water is available, prohibit use of drinking water for dust control at construction areas.

### Exemptions

1. If an alternate source of water is not available and dust control is required to comply with air quality requirements, water may be applied to construction areas or other areas at the minimum rate necessary to achieve the desired results provided that all appropriate best management practices are being employed.
2. Ballfields and playfields may be watered at the **minimum rate necessary** for safety purposes and dust control.
3. Customers with special medical needs, such as home dialysis, will be exempted from any emergency surcharge or restrictions, provided these customers notify the City of such a need. Their exemption will not apply to outdoor water use.

If water supply conditions continue to deteriorate and if irrigation is still occurring, lawn watering will be banned before moving to the Emergency Curtailment Stage.

### **EMERGENCY CURTAILMENT STAGE**

At this stage, the City would recognize that a critical water situation exists. Without additional significant curtailment actions, a shortage of water for public health and safety would be imminent.

This stage is characterized by two basic approaches. First, increasingly stringent water use restrictions would be established and enforced. Secondly, significant rate surcharges would be used to encourage customer compliance. While a rate surcharge may be implemented in either the Voluntary or Mandatory stages, a surcharge is a key component to the success of this stage, and any previous surcharge may be increased if appropriate.

### Objectives

- The objectives of the Emergency Curtailment Stage are to:
- Ensure that throughout the water shortage, an adequate water supply exists to protect public health and safety.
- Sharply reduce water demand.
- Restrict certain defined water uses in order to meet consumption goals.

## Triggers

The Emergency Curtailment Stage would be implemented when the WSRT determines that:

- The City is unable to fully use the Newaukum River water right due to low flows in the river and water quality concerns.
- The City is unable to fully use the Chehalis River water right due to the restriction of maintaining base flows within the River.
- The City is unable to fully use either the Newaukum River or Chehalis River source because of transmission line failure.
- The City is unable to use the full capacity of the water treatment plant because of equipment failure.
- Measures to reduce water use implemented in the Voluntary and Mandatory Stages have not adequately reduced demand.
- The time available to implement measures to reduce water use is not sufficient to allow education of customers required for voluntary or mandatory compliance.

## Public Message

The public message would be determined based upon actual conditions of the emergency.

*"A water supply emergency exists. Severe restrictions on water use are necessary to maintain adequate water supplies essential for basic public health and safety. The public's continued cooperation is requested. Restrictions will be strenuously enforced"*

## City of Chehalis Internal Operating Actions

1. The WSRT would define the water shortage as an emergency and, through the City Manager, would implement procedures for the Council to formally declare a Water Shortage Emergency.
2. The WSRT would develop a list of water use restrictions, prohibitions, exemptions, and surcharge rates for recommendation, subject to the City Managers approval, to present to the City Council for consideration.
3. The WSRT would increase the frequency of reports to the City Manager and City Council. Reports would provide detail on the implementation of the Emergency Curtailment Stage and customer response data.
4. The WSRT would establish water use reduction goals. Consumption goals may be set in a variety of ways. Determining factors include equity among customers and the utility billing software in use. Single-family residential goals may be set as a standard per house allotment or as a percentage reduction from previous year's consumption. Consumption goals may be below customers' average winter month use. Commercial, institutional, and multifamily residential customers may be asked to reduce water use by a set percentage of their average consumption during the previous year.
5. Adjust or modify utility billing systems to implement any approved surcharges and penalties.

6. Increase enforcement actions in accordance with the applicable ordinance approved by the City Council.
7. Provide training for personnel and deploy additional "Water Watcher" patrols.
8. Notify the Police Department regarding enforcement of curtailment actions and coordinate with them regarding the potential need for enforcement assistance.
9. Further enhance river level, aquifer and water quality monitoring actions.
10. WSRT to increase meeting frequency to daily status briefings to review the current situation and determine which actions are working and those that need to be improved. Focus on messages that are easy to communicate, implement, and have the potential to sharply reduce demand.

### Communication Actions

1. Define the problem to the public as an emergency, and institute formal procedures to declare a service area wide emergency.-
2. Inform customers of the rate surcharge and how it will affect them. Provide information on an appeal process.
3. Define and communicate exemptions for medical facilities and other public health situations.
4. Consult with and provide status report to state resource agencies, interest groups, and Chehalis Basin Partnership. Specific entities include Lewis County, City of Centralia, State Department of Health, interested environmental and community organizations and large commercial customers. Post updated status reports on the City website.
5. Through a media campaign and direct mail communicate to City customers the:
  - Scope and nature of rationing and curtailments.
  - Reasons for imposing curtailments.
  - Water use reduction goals.
  - Enforcement mechanisms and fines.
  - Projections for how long curtailments will be in place.
  - Rate surcharges.
6. Clearly identify any exemptions from the water use curtailment.
7. Inform customers about possible pressure reductions and problems this may cause.
8. Provide area landscape firms with water use curtailment information.
9. Provide contractors and landscape firms with information on locations to obtain alternate sources of water (if alternate sources can be identified) for street cleaning, construction projects, landscape irrigation, dust control, etc.
10. Post updated status reports on the City website.
11. Continue and enhance communication actions from the Advisory, Voluntary, and Mandatory Stages.

### Supply & Demand Management Actions

The following are possible Emergency Curtailment water use restrictions. All appropriate actions identified in the previous three phases of the drought response should be implemented in conjunction with these measures.

1. Prohibit all lawn/turf irrigation.
2. Prohibit all irrigation of gardens and ornamental landscapes.
3. Prohibit use of any ornamental fountain using drinking water for operation or makeup water.
4. Prohibit car washing except at commercial car wash facilities that recycle water.
5. Rescind all hydrant permits.
6. Prohibit washing of sidewalks, streets, decks, or driveways except as necessary for public health and safety.
7. Prohibit pressure washing of buildings unless water is obtained from a source other than the City.
8. Prohibit filling or adding water to swimming pools at public and private facilities.
9. Require the Fire Departments to discontinue the use of water in training exercises until the emergency is over.
10. If available, provide an alternate source of water to tanker trucks for street cleaning, construction projects, landscaping irrigation, dust control, etc.
11. Consider limitation of issuance of new meter installations for irrigation and/or domestic uses.

### Exemptions

1. If an alternate source of water is not available and dust control is required to comply with air quality requirements and dust control and other hydrant water uses are determined to be necessary to meet essential health and safety requirements, water may be applied to construction areas or other area. It can be applied only at the minimum rate necessary to achieve the desired result, provided that all appropriate best management practices are being employed.
2. Customers with special medical needs, such as home dialysis, will be exempt from any emergency surcharge or restriction, provided these customers notify the City of such a need. Their exemptions will not apply to outdoor water use.

**APPENDIX A**  
**City of Chehalis Water Shortage Response Plan**  
**Matrix of Shortage Response Actions**

The following matrix is intended to provide an overview of the possible management actions and the levels at which they would most likely be implemented. Additional and/or alternative actions may be necessary.

Action	Shortage Management Phase				Comments
	Advisory	Voluntary	Mandatory	Curtailment	
<b>Communications</b>					
Media coordination	X	X	X	X	
Develop & implement public outreach and education plan.	X	X	X	X	
Coordination with resource agencies and local jurisdictions.	X	X	X	X	
Coordinate with largest water users.	X	X	X	X	
Establish customer hotlines		X	X	X	
Notify irrigation customers of potential shut down procedures.			X	X	
<b>Internal Operating Actions (City)</b>					
WSR T coordination & planning	X	X	X	X	
Reduce all Maintenance & Operations water uses to essential levels.		X	X	X	
Reducing washing of City fleet vehicles		X	X	X	
Eliminate hosing of sidewalks, driveways, parking lots, etc. at City facilities		X	X	X	Exemption for public health or safety.
Reduce watering of City-managed landscapes. Eliminate seasonal plantings.	X	X	X	X	Meet or exceed citywide water use restrictions
As necessary, activate emergency intertie to increase emergency supply availability.		X	X	X	
Action	Shortage Management Phase				Comments
	Advisory	Voluntary	Mandatory	Curtailment	



Assess water main flushing activities. Increase water quality monitoring actions as necessary.	X	X	X	X	
Finalize water use restrictions, exemptions, and enforcement procedures and I penalties.			X	X	Subject to approval of City Council.
Surcharges & Penalties			X	X	
Water watcher" Patrols "			X	X	
Declare water emergency.				X	
<b>Supply &amp; Demand Management Actions</b>					
Residential indoor water use recommendations/tips.	X	X	X	X	
Residential outdoor water use recommendations/tips (non-landscape).	X	X	X	X	
Residential landscape water use recommendation/tips.	X	X	X	X	
Commercial water use recommendations/tips.	X	X	X	X	
Commercial landscape water use recommendations/tips.	X	X	X	X	
Water waste prohibition.	X	X	X	X	
<b>Landscaping</b>					
Time of day watering restrictions (i.e., prohibited from 7 a.m. to 9 p.m.).			X	X	
Day(s) of week lawn watering restrictions.			X	X	
Prohibit all lawn/turf watering, including new installations.			X	X	Delay of installation & bonding requirements possible. Possible exemptions for ballfields/playfields for safety purposes. All lawn watering banned prior to moving to Curtailment Level.
Prohibit all garden/ornamental				X	
Ornamental fountain restrictions.		X	X	X	Prohibit at Mandatory and Curtailment Level.

Car washing restrictions.		X	X	X	Request at Voluntary Level, restrictions as necessary
<b>Construction &amp; Facility Water Uses</b>					
Restrict/rescind hydrant use permits.			X	X	
Construction site water use restriction, dust control best management practices required.			X		Water use prohibited only if an alternate source (reclaimed water) is available. Best management practices
Construction site water use restrictions.				X	Water use prohibited. Alternate source (reclaimed water) may be used. Exemptions as necessary to meet air quality regulations.
Sidewalk, deck, and driveway washing restrictions.			X	X	Except as necessary for public health or safety.
Building pressure washing restrictions.			X	X	Limited at Mandatory Level, prohibited at Curtailment Level.
Fire Department training exercise restrictions.		X	X	X	Request at Mandatory Level, restricted at Curtailment Level.
Swimming pool water use restrictions.			X	X	Prohibit at Curtailment Level, both public and private.

**APPENDIX B**  
**City of Chehalis Water Shortage Response Plan**  
**Irrigation Response for City of Chehalis Managed Sites**

Site	Shortage Management Phase			Comments
	Level II	Level III	Level IV	
<b>Parks</b>				
Landscape	On	Reduce by 25-60%	100% reduction	The landscape should be hand watered until Level IV (Curtailment) is reached.
Turf	On	Reduce by 25-60%	100% reduction	The athletic fields need to be kept safe and irrigated if their use will be allowed.
<b>Buildings</b>				
Landscape	On	Reduce by 25-60%	100% reduction	
Turf	Off	Off	Off	
<b>Medians and Street Features</b>				
Landscape	Off	Off	Off	
Turf	Off	Off	Off	

**APPENDIX C**  
**City of Chehalis Water Shortage Response Plan**  
**Contact List**

A working list of contacts for easy reference should be developed and regularly updated by the Water Superintendent. In the event of a water shortage, the following will be contacted directly. They will be apprised of the situation, and their support and cooperation in reducing demand will be requested.

**Other Public Agencies**

- City of Centralia
- Lewis County
- Chehalis School District
- Lewis County PUD # 1
- Local State Offices
- Local Federal Offices

**Large Customers**

- • Staff will develop a contact list based on previous two year's water consumption

**Landscape Interests**

- •WSU/Lewis County Cooperative Extension
- •Local nurseries
- •Local landscape contractors
- •The Irrigation Association
- •Washington Association of Landscape Professionals
- •Washington State Nursery and Landscape Association

**Business Groups**

- Lewis County Chamber of Commerce
- Master Builders Association
- Rotary Clubs of Lewis County

**APPENDIX D**  
**City of Chehalis Water Shortage Response Plan**  
**Voluntary Customer Water Use Reduction Actions**

**Residential Indoor**

- Flush the toilet less often. Each flush uses 1.6 to 7 gallons of water, depending upon the age of the toilet.
- Dishwasher should be run only when there are full loads of dishes. Each load uses 8 to 13 gallons of water.
- Wash only full loads of laundry. Each load uses 15 to 40 gallons of water. Frontloading washing machines use approximately 30 percent less water than toploading models.
- Keep a pitcher of cold drinking water in the refrigerator rather than running the faucet until the water gets cold.
- Take shorter showers. Each minute of showering time uses 2 to 5 gallons of water. Try to limit showering time to five minutes.
- Avoid letting the faucet run while shaving, brushing teeth or washing vegetables.
- While waiting for hot water, use a container to catch tap water for use on plants.

**Residential Outdoors**

- Wash cars less often. Instead of using a hose, consider a commercial car wash that recycles water.
- Always use a shutoff nozzle when using a hose. Be sure there are no leaks in any hose fittings.

**Commercial and Residential Landscape**

- Water lawns and gardens only early in the morning or late in the evening to reduce water loss from evaporation.
- Consider letting established lawns go dormant until the shortage is over. Homes that normally water lawns will save from 25 to 50 percent by not watering them.
- Do not water lawns when it is raining. If you have an automatic irrigation system, learn how to change the program that controls your system in order to cut back on irrigation time. Turn off automated irrigation system clocks during rainy spells. Install a rain sensor on automatic irrigation systems that will override the system during rainfall.
- Eliminate outdoor water play, such as running through a sprinkler, plastic water slides, and wading/swimming pools that require frequent refilling.
- Eliminate all hosing of sidewalks, driveways, and decks. Use a broom instead.
- Water established plants only when necessary, testing the soil moisture levels in the root zone with your fingers. Two or four inches of mulch in your planting beds will help retain moisture.

- Create tree wells around trees to minimize runoff when watering.

## **Commercial**

- Set goals for reduced water use and inform managers and employees. Give businesses ideas for limiting water use and ask them for their ideas.
- Repair all leaks and dripping faucets. Ensure that constantly running toilets are repaired. Urge employees to report leaks.
- Reduce or eliminate routine vehicle cleaning during the shortage. Use a local commercial car wash facility that recycles water.
- Ensure that all hoses are fitted with shutoff nozzles.
- Eliminate hosing as a means of disposing of used ice.
- Eliminate all hosing of walkways, parking lots, and loading docks. If washing paved areas is necessary for public health and safety, pressure washers use substantially less water.
- Postpone routine building washing until after the shortage.
- Post signs informing customers of the nature of the water shortage and ask for cooperation in reducing water use.
- Turn off all non-recirculating fountains. On windy days, when there is significant water loss, turn off **all** fountains.
- Ask restaurants to deliver water only on request.
- Accelerate restroom upgrades by replacing older toilets with low flow (1.6- gallon-per-flush) or High Efficiency (1.0 to 1.3 gallon per flush) models.

**Appendix E**  
**Chehalis Water Shortage Response Plan**  
**Mandatory Restrictions-Enforcement Procedural Checklist**

- \_\_\_ Determine fines and/or surcharges to be imposed for mandatory restriction infractions, including whether or not there will be "one fine for all infractions" or whether certain selected water use reduction actions would command a higher fine than others.
- \_\_\_ Determine the number of warnings before fines or surcharges apply.
- \_\_\_ Establish a database for tracking violations.
- \_\_\_ Print self-duplicating "Notice of Violation" forms: one copy for location where violation occurred, one to record violation with billing. Print violations and fines on the Notice of violation.
- \_\_\_ Assign and train staff with customer service and communication experience to "Water Watch."
- \_\_\_ Establish procedure for "Water Watchers" to record warnings and penalties on customer accounts.
- \_\_\_ Establish a "hotline" for customers to report violations. To help avoid frivolous complaints, recorded message should note that only complaints with name and address of complainant will be pursued.
- \_\_\_ Provide all field and customer service staff members with fact sheets and question and answer sheets. Provide briefings on restrictions and enforcement procedures. Train field staff to tag obvious violations.

**APPENDIX F**  
**City of Chehalis Water Shortage Response Plan**  
**Fire Department WSRP Response**

The City of Chehalis' Fire Department and District Fire Departments uses water in a variety of ways. These uses include:

Fire fighting and accident response  
Vehicle washing  
Washing of training area  
Wet Training  
Pumper Testing

The following explains how these water uses might be affected during the four levels of drought response.

**Advisory Level**

At this level, the City would be communicating a possible water supply shortage to our customers. It may make sense to schedule any wet training for earlier or later in the season in case restrictions are in place.

**Voluntary Level**

In this level, the City would be asking our customers to voluntarily reduce their water use by a certain amount (generally about 10 percent). The Fire Department may change their water use at this level in the following ways.

- Fire fighting: The Fire Department would still respond to fires with the appropriate amount of water. How after incident clean up should occur with mechanical means when ever feasible.
- Vehicle washing: Currently, vehicles are washed at least twice a week. During this level, vehicles would only be washed if they have mud on them but would continued to be rinsed as needed but no more than once per day.
- Pumper testing: Test pumper as a part of wet training.
- Training: Scheduled wet training could still occur at this level.

At this level, the City would acknowledge a serious water supply shortage. Water use restrictions would be enforced with fines. The Fire Department may alter their water use in the following way at this level:

Fire fighting: The Fire Department would still respond to fires with the appropriate amount of water. How after incident clean up should only clean up with water when mechanical means are not feasible.



Vehicle washing: During this level, vehicles would only be washed if they have mud on them but would only be rinsed every other day as needed.

Pumper testing: Pumper testing should only occur as a safety measures require.

Training: Scheduled wet training should not occur at this level.

### **Emergency Curtailment**

At this level, the City of Chehalis would be faced with a critical water supply shortage. The goal would be to provide enough water to meet our customer's health and safety needs during the duration of the emergency. Customers would be allotted a certain amount of water and charged heavy surcharges if they exceed these amounts. No outdoor irrigation would be allowed for any customer. At this level, the Fire Department would need to change their water uses in the following ways.

Fire fighting: The Fire Department would still respond to fires with the appropriate amount of water. How after incident clean would only be with mechanical unless a safety issue exists.

Pumper testing: Would not be allowed.

Training: Scheduled wet training may not occur at this level.

**Appendix K**  
**Watershed Plan Agreement**

Exhibit 5-4 North Fork Newaukum/Centralia-Chehalis Watershed Plan

Weyerhaeuser Company has provided Washington State Department of Natural Resources with projected harvest and roading plans for the North Fork Newaukum drainage above the city water intakes (see maps titled "Harvest Plan North Fork Newaukum" and "Roading Plan North Fork Newaukum" both dated 2/2/90). These plans project harvest from 1990 through 1995. Weyerhaeuser has also made a projection of harvest sequence based on a maximum clearcut size of 120 acres, four years of green up between clearcuts and attempted to minimize stream side logging within any one year. This exercise indicated Weyerhaeuser will need approximately 30 years to cut the second growth stands currently in the basin. DNR recognizes that these plans are only projections, which will need to be modified to reflect on-the-ground conditions. As a result, DNR will schedule an annual plan review of progress and changes to the plan.

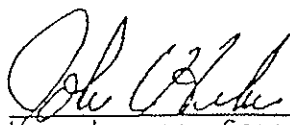
Weyerhaeuser agrees to apply practices as outlined by the Washington Forest Practices Rules and Regulations and the TFW agreement. Weyerhaeuser agrees to:

1. Minimize midslope roading.
2. Not side cast on steep slopes or unstable soils.
3. Suspend road construction when conditions are too wet.
4. Size all culverts to 100 year flood capacity.
5. Install energy dissipaters on culvert outlets where needed.
6. Abandon short spur roads where it makes sense to protect water quality.
7. Survey the road systems ASAP following major storms or at least annually for road maintenance needs.
8. Maintain all ditches and drainage structures on an annual basis and have them functional prior to October 1st.
9. In areas or on roads that have potential to affect water quality, restrict yarding and hauling to the drier seasons.
10. Promptly regenerate all clearcuts within 2 years of harvest with 1 year the norm.
11. Leave UMA's at a minimum of 1 acre per 80 acres of clearcut.
12. Meet or exceed Forest Practices Act RMZ requirements.
13. Seek ways to provide snags and/or wildlife trees.
14. Avoid disturbance of identified unstable areas.
15. All puncheon culverts will be replaced on roads associated with active forest practices applications prior to hauling.
16. Perched landings will be stabilized during the current operating season.

This plan specifically does not address herbicide or fertilizer application and Weyerhaeuser, DNR, and cities of Centralia and Chehalis recognize that any plans for these types of applications would require a separate review as provided for by the Forest Practices Act and TFW. Burning permits shall also be subject to forest practices review. The DNR may deny proposed burns if necessary to protect water quality.


DNR agrees to keep the cities of Centralia and Chehalis informed of all proposed forest practices in the Watershed and to include them in annual plan reviews. Weyerhaeuser intends to keep the cities informed of our plans and activities and to cooperate with them to maintain water quality.

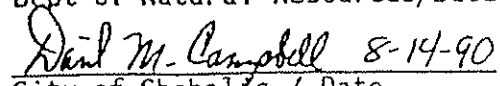
AGREED TO BY:

  
Weyerhaeuser Company / Date 7-27-90

  
City of Centralia / Date 8-14-90

145

  
Dept of Natural Resources / Date 7-27-90

  
City of Chehalis / Date 8-14-90

**Appendix L**  
**Cross-Connection Control Plan**

#### **13.04.070 Cross-connections.**

The city follows the procedures to enforce the cross-connection code using: Washington State Standards for Cross-Connections (WAC 246-290-490), the city of Chehalis cross-connection control plan, Manual of Cross-Connection Control published by the University of Southern California (USC Manual), and Cross-Connection Control Manual published by the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA) as they presently exist and as they may, from time to time, be amended.

A. The city requires that all water service connections, domestic potable water, fire sprinkler systems, or irrigation systems, existing and future, follow the guidelines of the city's cross-connection control plan. Any such cross-connection existing hereinafter is hereby declared unlawful and shall be disconnected and removed immediately. The cross-connection control specialist (CCS) or any designated representative of the city may limit the kind and number of service connections for any separate premises. No water service connection shall be allowed from the city water mains to any premises supplied by water from any other source unless the public works director gives special permission and that the connection is protected with an appropriate backflow assembly approved by the CCS.

B. When a cross-connection is found, an approved backflow prevention assembly(s) will be installed at the expense of the user, and the user will be required to follow the city's cross-connection control plan where a premises isolation backflow assembly will be installed. In-premises installation of a backflow assembly can be installed only with written permission by the CCS or mandated along with premises isolation when the CCS or any designated representative of the city and any other regulatory agencies determine a high health hazard exists, in accordance to WAC 246-290-490 and the city's cross-connection control plan. The backflow prevention assembly(s) once installed will be inspected and approved by the city and tested by a state-certified backflow assembly tester (BAT). The public works department requires a certified test indicating the assembly(s) has passed before releasing the certificate of occupancy on any building.

C. Backflow prevention assembly(s) installed will be of a type and model preapproved by the Department of Health (DOH) or the city and will be installed, inspected, and tested in accordance to the city's cross-connection control plan. The city will have the authority to perform regular inspections on all backflow assembly(s) (premises and in-premises) connected to the city's water system and will be provided access to the premises to inspect.

D. New water service customers will be required to install a residential dual check device immediately downstream of the water meter. Installation of this residential dual check device on a retrofit basis on existing service lines will be instituted at a time and at a potential cost to the homeowner as deemed necessary by the city.

E. The city will notify the service customer that an annual test of the backflow prevention assembly(s) is required not less than 30 days before such annual test is required.

F. Backflow assembly testers (BAT) shall supply the city with documentation indicating that their testing equipment has a current certificate of accuracy and that they have a current Department of Health BAT certification card. This information must be submitted on an annual basis as indicated in the city's cross-connection control plan.

G. Violations.

1. Violations by Customer.

a. It is a violation of the cross-connection control plan for a customer to:

- i. Fail to correct a faulty cross-connection within seven days of discovery of the problem;
- ii. Fail to install, test, or maintain a backflow prevention assembly or premises isolation, as required by the cross-connection control plan;
- iii. Remove or bypass a backflow prevention assembly(s);
- iv. Refuse to allow a designated city representative access to any structure serviced by the public water supply for inspection.

b. Violations by a customer subject the customer to termination of service by the city. Service shall not resume until the customer:

- i. Repairs the violation so that the cross-connection is in compliance with the city's cross-connection control plan as determined by the city; and
- ii. Makes payment to the city for:
  - (A) Its expenses incurred for inspection and enforcement of the plan, including attorney's fees; and
  - (B) Any penalties, as specified in this section.

2. Violations by Certified Backflow Assembly Testers.

a. It is a violation of the cross-connection control plan for a backflow assembly tester (BAT) to:

- i. Intentionally or negligently file forms containing false data, including but not limited to data not derived from actual testing.

b. A violation by a backflow assembly tester may subject the BAT to:

- i. Penalties as specified in this section; and/or
- ii. Reporting by the city to the Washington Certification Board with a recommendation of license revocation.

H. Penalties.

1. Penalties for violations by customer, per subsection (G)(1) of this section:

- a. First violation – \$200.00;
- b. Second violation – \$500.00;
- c. Third violation – \$1,000;
- d. Fee to restore water service – \$50.00.

2. Penalties for violations by backflow assembly tester, per subsection (G)(2) of this section:

- a. First violation – \$1,000;
- b. Second violation – \$2,000;
- c. Third violation – \$5,000. [Ord. 695B, 2001.]

**Appendix M**  
**Detailed Financial Analysis**



City of Chehalis  
 Water Fund  
 Exhibit 1  
 Escalation Factors

ESCALATION FACTORS	Budget	Projected					
	2010	2011	2012	2013	2014	2015	
<b>Revenues:</b>							
Growth	Budget	0.8%	0.8%	0.8%	0.8%	0.8%	From WSP Demand Forecast
Miscellaneous Revenues	Budget	1.0%	1.0%	1.0%	1.0%	1.0%	
Interest Income (Interest Rate)		1.00%	1.50%	2.00%	3.00%	3.00%	
<b>Expenses:</b>							
Labor		3.0%	3.0%	4.0%	4.0%	4.0%	From Historical Compensation Increases
Benefits		4.0%	4.0%	4.0%	4.0%	4.0%	
Materials & Supplies		3.0%	3.0%	3.0%	3.0%	3.0%	
Miscellaneous		3.0%	3.0%	3.0%	3.0%	3.0%	
<b>New Debt Service:</b>							
Revenue Bond							
Term in Years		20	20	20	20	20	
Rate		5.5%	5.5%	5.5%	5.5%	5.5%	
PWTF							
Term in Years		20	20	20	20	20	
Rate		1.0%	1.0%	1.0%	1.0%	1.0%	

City of Chehalis  
Water Fund - Exhibit 2  
Sources and Applications of Funds

	FORECAST						
	2010	2011	2012	2013	2014	2015	Notes
<b>SOURCES OF FUNDS</b>							
Rate Revenues	\$2,251,200	\$2,251,200	\$2,269,210	\$2,287,363	\$2,305,662	\$2,324,107	
<b>Total Rate Revenues</b>	\$2,251,200	\$2,251,200	\$2,269,210	\$2,287,363	\$2,305,662	\$2,324,107	10/11 Budget, As Growth
Other Revenues							
Interest Inc.	\$10,000	\$15,000	\$47,728	\$56,899	\$82,121	\$80,432	Calculated on Reserve Balances
Intergovernmental	0	0	0	0	0	0	
Other Misc Revenue	200,000	26,000	26,260	26,523	26,788	27,056	09/10 Budget, As Misc Rev
<b>Total Other Revenues</b>	\$210,000	\$41,000	\$73,988	\$83,421	\$108,909	\$107,488	
<b>TOTAL OPERATING REVENUES</b>	\$2,461,200	\$2,292,200	\$2,343,198	\$2,370,785	\$2,414,571	\$2,431,595	
<b>TOTAL SOURCES OF FUNDS</b>	\$2,461,200	\$2,292,200	\$2,343,198	\$2,370,785	\$2,414,571	\$2,431,595	
<b>USE OF FUNDS</b>							
<b>Administration</b>							
Salaries & Wages	\$94,602	\$97,440	\$101,338	\$105,391	\$109,607	\$113,991	As Labor
Personnel Benefits	39,443	41,021	42,662	44,368	46,143	47,988	As Benefits
Supplies	9,550	9,837	10,132	10,436	10,749	11,071	As Materials & Supplies
Other Services & Charges	18,196	18,742	19,304	19,863	20,480	21,094	As Materials & Supplies
Intergovernmental Services & Taxes	0	0	0	0	0	0	As Materials & Supplies
Interfund Payments for Services	220,435	227,048	233,859	240,875	248,102	255,545	As Materials & Supplies
<b>Total Administration</b>	\$382,226	\$394,087	\$407,294	\$420,953	\$435,079	\$449,689	
	9%	3%	3%	3%	3%	3%	
<b>Operations &amp; Maintenance</b>							
Salaries & Wages	\$482,288	\$496,757	\$516,627	\$537,292	\$558,784	\$581,135	As Labor
Personnel Benefits	206,743	215,013	223,613	232,558	241,860	251,534	As Benefits
Supplies	535,673	551,743	568,295	585,344	602,905	620,992	As Materials & Supplies
Other Services & Charges	109,110	112,383	115,755	119,227	122,804	126,488	As Materials & Supplies
Interfund Payments for Services	139,916	144,113	148,437	152,890	157,477	162,201	As Materials & Supplies
<b>Total Operations &amp; Maintenance</b>	\$1,473,730	\$1,520,009	\$1,572,727	\$1,627,312	\$1,683,829	\$1,742,351	
	4%	3%	3%	3%	3%	3%	
<b>TOTAL O&amp;M EXPENSES</b>	\$1,855,956	\$1,914,097	\$1,980,022	\$2,048,265	\$2,118,909	\$2,192,040	
NET INCOME	\$605,244	\$378,103	\$363,176	\$322,520	\$295,662	\$239,555	
<b>Debt Service</b>							
Revenue Bonds - Principal	\$0	\$0	\$0	\$0	\$0	\$0	Debt Schedule
Revenue Bonds - Interest	0	0	0	0	0	0	Debt Schedule
SRF #5 Loans - Principal	45,946	47,095	48,272	49,479	50,716	51,984	Debt Schedule
SRF #5 Loans - Interest	14,339	13,191	12,013	10,806	9,569	8,301	Debt Schedule
PWTF-WTRFB Loans - Principal	50,001	50,001	50,001	50,001	50,001	50,001	Budget
PWTF-WTRFB Loans - Interest	13,750	12,500	12,500	12,500	12,500	12,500	Budget
PWTF-WTRFB (01) Loans - Principal	61,463	63,076	63,076	63,076	63,076	63,076	Budget
PWTF-WTRFB (01) Loans - Interest	5,225	5,046	5,046	5,046	5,046	5,046	Budget
New Revenue Bond Payment	0	167,359	167,359	167,359	167,359	167,359	Calc.
<b>Total Debt Service</b>	\$190,724	\$358,267	\$358,267	\$358,267	\$358,267	\$358,267	
<b>Taxes and Transfers</b>							
Change in Working Capital	(\$187,480)	(\$29,726)	\$39,928	\$60,991	(\$16,769)	(\$14,250)	
Transfer Out	0	0	0	0	0	0	
Taxes	0	0	0	0	0	0	
<b>Total Taxes and Transfers</b>	(\$187,480)	(\$29,726)	\$39,928	\$60,991	(\$16,769)	(\$14,250)	
<b>TOTAL APPLICATION OF FUNDS BEFORE CIP</b>	\$1,859,200	\$2,242,637	\$2,378,217	\$2,467,523	\$2,460,407	\$2,536,057	
<b>BALANCE/(DEFICIENCY) AFTER O&amp;M</b>	\$602,000	\$49,563	(\$35,019)	(\$96,738)	(\$45,835)	(\$104,462)	

	FORECAST						Notes
	2010	2011	2012	2013	2014	2015	
<b>Capital Outlays</b>							
Annual Historical CIP Expenditures	\$577,000	\$0	\$0	\$0	\$0	\$0	Annual Reports/Budget
Water Maintenance & Operations	25,000	25,000	25,000	25,000	25,000	279,263	2010-2015 CIP
Water Distribution System	0	3,157,400	579,328	578,652	328,244	1,003,669	2010-2015 CIP
Water Supply	0	0	449,440	119,102	681,738	0	2010-2015 CIP
Water Pump Stations	0	0	123,596	750,340	50,499	321,174	2010-2015 CIP
To Capital Reserve	0	1,414,800	0	0	0	0	Average Annual CIP
<b>Total Capital Outlays</b>	<b>\$602,000</b>	<b>\$4,597,200</b>	<b>\$1,177,364</b>	<b>\$1,473,094</b>	<b>\$1,085,481</b>	<b>\$1,604,106</b>	
<b>Less: Outside Funding Sources</b>							
Cost Contributions/Capital Contributions	\$0	\$2,247,200	\$432,586	\$375,170	\$94,686	\$562,055	2010-2015 CIP
New Rev. Bond Proceeds	0	2,000,000	0	0	0	0	Input
Use of Capital Reserve	0	0	244,778	397,924	90,795	42,051	Input
<b>Total Outside Funding</b>	<b>\$0</b>	<b>\$4,247,200</b>	<b>\$677,364</b>	<b>\$773,094</b>	<b>\$185,481</b>	<b>\$604,106</b>	
<b>CIP From Rates</b>	<b>\$602,000</b>	<b>\$350,000</b>	<b>\$500,000</b>	<b>\$700,000</b>	<b>\$900,000</b>	<b>\$1,000,000</b>	2006 Depr Expense: \$263,551
<b>TOTAL REVENUE REQUIREMENTS</b>	<b>\$2,461,200</b>	<b>\$2,592,637</b>	<b>\$2,878,217</b>	<b>\$3,167,523</b>	<b>\$3,360,407</b>	<b>\$3,536,057</b>	
<b>Balance/(Deficiency) of Funds Before Added Tax</b>	(\$0)	(\$300,437)	(\$535,019)	(\$796,738)	(\$945,835)	(\$1,104,462)	
<b>Plus Additional Taxes @ 5.029%</b>	(\$0)	(\$15,909)	(\$28,331)	(\$42,190)	(\$50,085)	(\$58,485)	State Utility Taxes
<b>Balance/(Deficiency) of Funds</b>	(\$0)	(\$316,347)	(\$563,350)	(\$838,928)	(\$995,920)	(\$1,162,947)	
<b>Balance as a % of Rate Revenues</b>	<b>0.00%</b>	<b>14.05%</b>	<b>24.83%</b>	<b>36.68%</b>	<b>43.19%</b>	<b>50.04%</b>	
<b>Proposed Rate Adjustment</b>	<b>0.00%</b>	<b>15.00%</b>	<b>10.00%</b>	<b>10.00%</b>	<b>5.00%</b>	<b>5.00%</b>	Input
Add'l rate revenue from adjustment	0	337,680	601,341	895,503	1,063,083	1,241,373	
<b>Balance/Deficiency after adjustment</b>	<b>(\$0)</b>	<b>(\$0)</b>	<b>(\$0)</b>	<b>(\$0)</b>	<b>\$0</b>	<b>(\$0)</b>	
Add'l adjustment to balance	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
<b>Average Residential Customer Rate - based on 1,000 cu ft</b>	<b>\$43.02</b>						
Proposed Customer Rate	\$43.02	\$49.47	\$54.42	\$59.86	\$62.86	\$66.00	
Rate Difference - Monthly	43.02	6.45	4.95	5.44	2.99	3.14	
<b>Debt Service Coverage Ratio (All Debt)</b>							
Before Balance Adjustment	3.17	1.06	1.01	0.90	0.83	0.67	
After Balance Rate Adjustment	3.17	1.89	2.51	3.12	3.47	3.75	
<b>Reserve Funds</b>							
<b>Operating Reserve</b>							
Beginning Balance	\$2,189,129	\$2,001,649	\$1,971,923	\$2,011,851	\$2,072,842	\$2,056,073	
++ Change in Working Capital	(187,480)	(29,726)	39,928	60,991	(16,769)	(14,250)	
Ending Balance	\$2,001,649	\$1,971,923	\$2,011,851	\$2,072,842	\$2,056,073	\$2,041,823	
Minimum Target	\$228,816	\$237,946	\$247,605	\$257,727	\$267,410	\$277,462	
<b>Capital Reserve</b>							
Beginning Balance	\$0	\$0	\$1,414,800	\$1,170,022	\$772,098	\$681,303	
Plus: Additions	0	1,414,800	0	0	0	0	
Less: Uses of Funds	0	0	244,778	397,924	90,795	42,051	
Ending Balance	\$0	\$1,414,800	\$1,170,022	\$772,098	\$681,303	\$639,252	
Minimum Target	\$1,520,741	\$1,520,741	\$1,520,741	\$1,520,741	\$1,520,741	\$1,520,741	
<b>Target Minimum Reserve Levels</b>							
Operating Reserve	\$228,816	\$237,946	\$247,605	\$257,727	\$267,410	\$277,462	45 days O&M + Taxes
Capital Reserve	1,520,741	1,520,741	1,520,741	1,520,741	1,520,741	1,520,741	Average Annual Capital Expense
<b>Total Target Reserves</b>	<b>\$1,749,557</b>	<b>\$1,758,687</b>	<b>\$1,768,346</b>	<b>\$1,778,468</b>	<b>\$1,788,151</b>	<b>\$1,798,203</b>	
<b>Total Funds Projected Ending Balance:</b>	<b>\$2,001,649</b>	<b>\$3,386,723</b>	<b>\$3,181,873</b>	<b>\$2,844,940</b>	<b>\$2,737,376</b>	<b>\$2,681,075</b>	

**Appendix N**  
**Plan Review Comments**



## Local Government Consistency Review Checklist

Water System Name: City of Chehalis PWS ID: 12250P

Planning/Engineering Document Title: 2011 Water System Plan Plan Date: March 2011

Local Government with Jurisdiction: City of Chehalis Department of Community Development

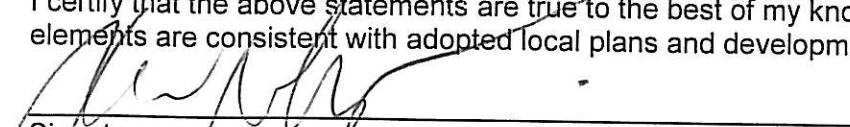
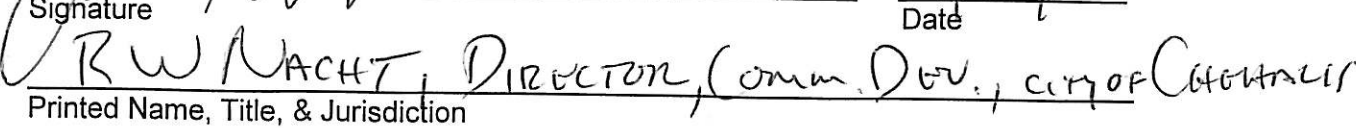
**WAC 246-290-108 Consistency with local plans and regulations:**

Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b) (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Section(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted <u>land use and zoning</u> within the applicable service area.	Sec 2.3 & 2.4	Y
b) The <u>six-year growth projection</u> used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	Sec 4.1 & Table 4-9	Y
c) Applies to <u>cities and towns that provide water service</u> : All water service area policies of the city or town are consistent with the <u>utility service extension ordinances</u> of the city or town.	Sec 3.3 & Appendix D	Y
d) <u>Service area policies</u> for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	Sec 2.3, 3.1, & 3.3	Y
e) <u>Other relevant elements</u> related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	Sec 3.1, Appendix H	Y

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

  
 Signature \_\_\_\_\_ Date 4/12/11  
  
 Printed Name, Title, & Jurisdiction