



City of Pacific

DEVELOPMENT STANDARDS

August 2011

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FORWARD

Title

This document shall be known and may be cited as the *Pacific Development Standards (PDS)*, 2nd Edition.

Authority

The *Pacific Development Standards (PDS)* is enacted under the authority granted to the City of Pacific by the constitution of the State of Washington and sections of the Revised Code of Washington.

Legislative Intent

The intent of the *Pacific Development Standards (PDS)* is to provide a comprehensive program by which the citizens of the City can guide the development of their community in a logical and orderly manner, maintain a high quality living and working environment, preserve and enhance the natural environment and provide for the protection and enhancement of the public health, safety and general welfare. In carrying out this intent, the *PDS* establishes goals, policies, and plans for the development of the community. It provides for the implementation of the goals, policies, and plans through the adoption, administration, and enforcement of plans, regulations, procedures, capital improvements and municipal services and programs.

The City's land use and development goals, policies, regulations and procedures are the basis for these Development Standards. The *PDS* will be updated periodically.

The *PDS* is meant to summarize more specific requirements contained in the *Pacific Municipal Code*. These summaries should not be construed to necessarily state all obligations or requirements that must be met. The *Pacific Municipal Code* is updated periodically. If portions of the *PDS* and *Pacific Municipal Code* are in conflict, the *Pacific Municipal Code* shall govern. Contact the City directly to request updates to the *Pacific Municipal Code*.

Introduction

The *Pacific Development Standards (PDS)* was prepared to provide clarity and consistency regarding the City's laws, policies, and standards affecting private and public development activities. In some cases, the *PDS* does not contain an entire document, but instead references applicable documents and their relevant sections. These combined standards are applied to all projects within the City limits, but are also applied to other relevant areas, such as projects within the City utility service areas, the urban growth management area, and any other places that the City provides services outside its City limits.

The City's goal is to help produce a high quality of living and working environment within the City of Pacific.

Updates

The City will constantly attempt to update and revise the *PDS* periodically.

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GENERAL CONSIDERATIONS

1.1 GENERAL

The *Pacific Development Standards (PDS)*, 2nd Edition, replaces the *Pacific Development Standards (PDS)*, 1st Edition.

These Standards shall apply to all improvements within the public right-of-way and/or public easements, to all improvements required within the proposed public right-of-way of new subdivisions, for all improvements intended for ownership, operations or maintenance by the City, the City's Urban Growth Management Area, utility service areas, and for all other improvements (on or offsite) for which the City Code requires approval from the Public Works Director and/or City Planning Commission and/or the City Council. These Standards apply to both public and private projects. Facilities outside the city rights-of-way, such as private streets or drainage systems, are regulated through the City's police power authority to ensure public health, safety, and welfare. These Standards are intended as guidelines for designers and developers in preparing their plans and for the City in reviewing plans. Where minimum values are stated, greater values should be used whenever practical; where maximum values are stated, lesser values should be used where practical. The developer/proponent is however cautioned that higher standards and/or additional studies and/or environmental mitigation measures may, and will, in all likelihood, be imposed by the City when developing on, in, near, adjacent, or tributary to sensitive areas to include, but not be limited to, steep embankments, creeks, ponds, lakes, certain wildlife habitat, unstable soils, wetlands, etc. Situations may arise where the application of individual Standards from this document will not ensure the protection of public health, safety, and welfare. Accordingly, the Public Works Director may impose additional or more stringent standards than those contained in this document or require the modification of plans, specifications, or operations to achieve the necessary public health, safety, and welfare. Modifications may include, but are not limited to, scheduling, phasing, or timing restrictions.

Any improvements not specifically covered herein by these Standards must meet or exceed the latest edition of the Standard Specification for Road, Bridge & Municipal Construction, State of Washington, and current amendments thereto, revised as to form to make reference to Local Governments. Said specifications shall be referred to hereafter as the "Standard Specifications" or "WSDOT/APWA Standard Specifications."

Where improvements are not covered by these details nor by the WSDOT/APWA Standard Specifications nor by the Standard Details, the City will be the sole judge in establishing appropriate standards. Where these "standards" conflict with any existing City ordinances or discrepancies exist within the body of this text, the higher "standards" shall be utilized as determined by the Public Works Director. Where these "standards" conflict with the *Pacific Municipal Code*, the *Pacific Municipal Code* shall govern.

These guidelines and Standards will prevail in the event conflict is found or identified in any other City rule, regulation, or policy.

1.2 REFERENCES

Except where these Standards provide otherwise, design, construction workmanship, and materials shall be in accordance with the most current edition of the following publications published separately by the Washington State Department of Transportation (WSDOT), jointly by WSDOT and the Washington State Chapter of the American Public Works Association (APWA), Washington State Department of Ecology (WSDOE), Washington State Department of Health (DOH), or King County:

- A. *WSDOT/APWA Standard Plans for Street, Bridge and Municipal Construction*, referred to in these Standards as the “WSDOT/APWA Standard Plans.”
- B. *WSDOT/APWA Standard Specifications for Street, Bridge and Municipal Construction*, referred to in these Standards as the “WSDOT/APWA Standard Specifications.”
- C. *WSDOT Design Manual*
- D. *WSDOT Hydraulic Manual*
- E. *WSDOT Traffic Manual*
- F. *WSDOT Utilities Manual*
- G. *WSDOT Construction Manual*
- H. *WSDOT Highway Runoff Manual*
- I. *WSDOE Criteria for Sewage Works*
- J. *DOH Water System Design Manual*
- K. *King County Surface Water Design Manual (KCSWDM)*
- L. *WSDOE Stormwater Management Manual for Western Washington (SMMWW)*
- M. *Manual on Uniform Traffic Control Devices (MUTCD)*
- N. *Institute of Transportation Engineers (ITE) Standards*
- O. American Association of State Highway and Transportation Officials (AASHTO)
- P. American Public Works Association (APWA)
- Q. Rules and regulations as adopted in the *Pacific Municipal Code*.
- R. *City of Pacific Comprehensive Plan*, City of Pacific Planning Department, Pacific, WA
- S. The City of Pacific Transportation Maps
- T. Washington State Shoreline Management Act
- U. National and State Environmental Policy Acts
- V. Americans with Disabilities Act (ADA)
- W. City of Pacific Public Works Department policies and procedures.
- X. Criteria set forth in the Local Agency Guidelines as amended and approved by WSDOT.

- Y. Conditions and standards as set forth in the *City of Pacific Water System Plan*, most current edition.
- Z. Rules and regulations of the State Board of Health regarding public water supplies, as published by the State Department of Health. (WAC 292-290).
- AA. Conditions and standards as set forth in the *King and Pierce County Coordinated Water System Plan*, most current edition.
- BB. Conditions and standards as set forth in the *City of Pacific Comprehensive Sanitary Sewer Plan*, most current edition.
- CC. *Recommended Standards for Water Works, (Ten State Standards)* as published by The Great Lakes Upper Mississippi Board of State Public Health and Environmental Managers.
- DD. *State of Washington Standard Specifications for Road, Bridge and Municipal Construction, American Water Works Association (AWWA) Standards*
- EE. *Americans with Disabilities Act Accessibility Guidelines (ADAAG)*

In cases where these Standards conflict with the standards or procedures of the WSDOT or the Federal Highway Administration (FHWA), the state or federal requirements shall take precedence for the city street projects with state or federal funding.

1.3 REQUIREMENTS

1.3.1 Disclaimer of Liability

Responsibility for complying with the requirements of these Standards and other applicable code provisions rests solely with the permit applicant. The applicant is responsible for determining and accurately representing to the City the following information:

- A. Legal descriptions.
- B. Ownership interests and record title;
- C. Location of property lines and required setbacks;
- D. Land use classification (zoning);
- E. Drainage courses; and
- F. Any other information supplied by the applicant.

The City of Pacific may rely upon all information furnished by the applicant, both oral and written, and any other information acquired by it.

1.3.2 Errors and Omissions

At the discretion of the Public Works Director, any significant errors or omissions in the approved plans or information used as a basis for such approvals may constitute grounds for withdrawal of the approvals and/or stoppage of any or all permitted work. It shall be the responsibility of the developer or contractor to show cause as to why such work

should continue and make such changes in plans that may be required by the Public Works Director before the plans are re-approved.

1.3.3 Penalties

Failure to comply with these Standards will be cause for withholding or withdrawing approval of plans or drawings, withholding of bonds, final inspection approval or occupancy certificates, and/or other penalties as provided by City code or state law.

1.3.4 Utility Extension

Anyone who wishes to extend any City utility should contact the Public Works Department for an extension/connection fee estimate and any special extension requirements.

Utility mains will be extended to and across the frontage of and through the extremes of the property being developed for loop closures and/or future development as determined by the Public Works Director and current utility comprehensive and master plan.

A. Late Comer Agreements

Late comer agreement requirements are presented in *Pacific Municipal Code* 15.08.

15.08.010 Authority.

The City has the discretionary power to grant latecomer's agreements to developers and owners for the reimbursement of a pro rata portion of the original costs of water systems, sanitary sewer systems, storm water drainage systems, and street improvements including signalization and lighting. The authority to approve a latecomer's agreement is vested in the Pacific City Council. (Ord. 1468 § 1, 2000).

15.08.020 Application.

Application for a latecomer's agreement shall be made 30 days prior to issuance of the construction permit. Application shall be by letter to the community development director requesting a latecomer's agreement, or upon forms prepared by the community development department. Any application for a latecomer's agreement shall contain the following information:

- A. Legal description of applicant's property.
- B. Legal description of the proposed benefited properties.
- C. Vicinity maps of applicant's property, proposed benefiting properties, and the location of the improvement.
- D. Estimated cost data and inventory for the improvements.
- E. Proposed pro rata share of the cost of the improvement to be borne by the benefiting properties, and a proposed method of assessment of that pro rata share to the individual benefiting properties.
- F. Payment of full amount of non-refundable processing fee as set forth in PMC 15.08.170. (Ord. 1468 § 1, 2000).

15.08.030 Preliminary notice of latecomer's agreement and appeal rights.

The community development department shall determine the preliminary latecomer's area boundaries and draft the legal description of the latecomer boundary and a preliminary latecomer boundary map. The City shall mail a notice to all owners of record of property within the latecomer boundary and to the developer or holder of the latecomer agreement. The notice shall include an approximation of the preliminary assessment, the proposed latecomer boundary map, and the description of the property owners' rights and options to participate in the latecomer's agreement. This preliminary notice form will not be recorded with either King or Pierce County. The property owners may, upon payment of the appeal fee set forth in PMC 15.08.170, request an appeal hearing before the Pacific City Council within 20 days of the mailing. Appeals must adhere to the criteria established under PMC 15.08.050 (C) but will be limited to the issue of whether or not a specific property should be included in the latecomer's area. The city council, by ordinance or voice vote, may delegate the hearing examiner or other hearing officer to hold the requisite public hearing and establish a record, together with a recommendation for the Pacific City Council. The city council's ruling is determinative and final. (Ord. 1468 § 1, 2000).

15.08.040 Preliminary approval.

The city council may grant preliminary approval for a latecomer's agreement based upon the information contained in the request for a latecomer's agreement and any input from the community development director, or the city council may request further information from the applicant and/or the director, or the city council may deny the preliminary latecomer's agreement. As part of any preliminary approval, the city council shall indicate the duration for which the latecomer's will be approved, after completion of the improvements, which approval period shall not be more than seven years. No extensions will be granted beyond the period of time established by the city council.

Following preliminary approval by the city council, the holder of the latecomer agreement shall submit to the community development director any further information requested by the director or the city council, including final cost data and actual facilities installed (as-built drawing) with invoices, etc., supporting the costs incurred. (Ord. 1468 § 1, 2000).

15.08.050 Final latecomer's agreement.

- A. Preparation of Proposed Final Assessment Roll. Following construction, the community development department shall prepare, or have prepared by a civil engineer, a final proposed latecomer's agreement, which will include a legal description and a map of the latecomer boundary. The cost of the improvements will be spread among the property owners based upon their pro rata share of said costs. The costs will become payable upon the issuance of a city permit authorizing the benefiting property owner(s) to construct improvements that would allow the user's (s') property to derive direct benefit from these facilities. The method of

assessment to be used will be one or more of the following methods, unless otherwise approved or directed by the Pacific City Council:

1. Front foot method;
2. Zone front foot method;
3. Square footage method;
4. Trip generation (traffic) method;
5. Other equitable method, as determined by the City; or
6. Any combination of the above methods.

The method(s) used and the dollar amount(s) will be included in the final latecomer's agreement.

- B. Final Notice of Latecomer's Agreement. Following city council approval of the final latecomer's agreement, the City shall mail a notice to all owners of record of property within the latecomer boundary and to the developer or holder of the latecomer's agreement. The notice shall include the final assessment per unit charge, the legal description and a map of the latecomer boundaries, and the description of the property owners' rights and options to participate in the latecomer's agreement.
- C. Appeal. Within 20 days of the date of the mailing, any property owner may submit an appeal in writing to the Pacific City Council. An appeal must include a statement of claimed errors concerning the proposed assessment, and must be accompanied by a nonrefundable fee as set forth in PMC 15.08.170. Errors must be set forth in writing and must be related to cost, methodology for cost distribution, or benefit to the property. Objections by a benefiting property owner to the recording of a potential assessment against their property do not constitute a valid appeal. If the benefiting property owner contests the costs of the assessment, the owner must provide a basis for the claimed discrepancy, such as an estimate from contractors or other reliable sources. If the benefiting property owner contests the cost methodology used, the owner must show why it is not equitable and provide a suggested alternate method of assessment and the justification for its use in place of the staff recommended method. If a benefiting property owner contests the benefit, the owner must provide a statement or documentation on why a particular parcel has no future potential benefit.

Upon receipt of an appeal and the required fee, the city clerk shall transmit the appeal and the official file to the city council. The city council may delegate to the hearing examiner the responsibility to hold a public hearing, establish the record, and provide a written report containing a recommendation to the city council. The city council shall concur with, alter, or deny the hearing examiner's recommendation.

- D. Council Action. Approval of a latecomer's agreement shall be by ordinance, which shall authorize the developer, mayor, and city clerk to sign the agreement. If no appeal is filed, the ordinance shall approve the preliminary latecomer's agreement. If an appeal is filed, the ordinance shall either amend the preliminary latecomer's agreement or approve it without amendment. (Ord. 1468 § 1, 2000).

15.08.060 Execution, recording, and notice.

The latecomer's agreement is mailed to the developer by the city clerk and must be signed, notarized, and returned within 60 days of the date of city council approval for execution by the mayor and city clerk. If not consummated within the 60-day period, the latecomer's agreement will become null and void. The city council can give consideration to extending this period by a showing of hardship or excusable neglect on the part of the holder of the latecomer's agreement. The fully executed latecomer's agreement shall be recorded in the official property records of the county or counties in which the properties subject to the latecomer's agreement are located. (Ord. 1468 § 1, 2000).

15.08.070 Contract finality.

Once the latecomer's agreement together with a legal description and a map of the latecomer's boundary are recorded with the county or counties in which the properties subject to the agreement are located, it shall be binding on owners of record within the assessment area. Following receipt from the county or counties of the recorded latecomer's agreement, the city clerk will mail a copy of the recorded agreement to the holder of the latecomer's agreement. (Ord. 1468 § 1, 2000).

15.08.080 Title to improvement and assignment of benefit.

Before the City will collect any latecomer's fee, the holder of the latecomer's agreement will transfer title to all of the improvements under the latecomer's agreement to the City of Pacific. The holder of the latecomer's agreement will also assign to the City the benefit and right to the latecomer's fee should the City be unable to locate the holder of the latecomer's agreement to tender any latecomer's fee that the City has received. The holder of the latecomer's agreement shall be responsible for keeping the City informed of their correct mailing address. Should the City be unable to locate the holder of the latecomer's agreement in order to deliver a latecomer's fee, the City shall undertake an independent investigation to determine the location of the holder of the latecomer's agreement. Should the City, after a good faith attempt to locate the holder of the latecomer's agreement, be unable to do so, the latecomer's fee shall be placed in a separate fund for two years. At any time within the two-year period, the holder of the latecomer's agreement may receive the latecomer's fee, without interest, by applying to the City for that latecomer's fee. After the expiration of the two-year period, all rights of the holder of the latecomer's agreement to that fee shall expire, and the City shall be deemed to be the owner of those funds. (Ord. 1468 § 1, 2000).

15.08.090 Tender of fee.

When the City of Pacific has received the funds for a latecomer's fee, it will forward that fee, if possible, to the current holder of the latecomer's agreement at the current address of the holder of the latecomer's agreement on file with the City, within 30 days of receipt of the funds. It is the responsibility of the holder of the latecomer's agreement to keep his/her address current with the City. Funds received by negotiable instrument, such as a check, will be deemed received 10 days after delivery to the City. Should the City fail to forward the latecomer's fee to the holder of the latecomer's agreement through the City's sole negligence, then the City shall pay the holder of the latecomer's agreement interest on those moneys at the rate paid by the Washington State Local Government Pool. However, should the holder of the latecomer's fee not keep the City informed of its current correct mailing address, or should the holder otherwise be negligent and thus contribute to the failure of the City to pay over the latecomer's fee, then no interest shall accrue on late payment of the latecomer's fee. (Ord. 1468 § 1, 2000).

15.08.100 Release of assessment.

When funds are received for a latecomer's fee, the City shall make an entry into the City's file for the real property owned by the party paying the latecomer's fee, within 30 days of receipt of the funds. An individual certificate of payment will not be recorded with the county or counties in which the properties subject to the latecomer's agreement are located. The City will record a certificate of payment and release of assessment for the entire latecomer area when all the property owners have paid their assessment. (Ord. 1468 § 1, 2000).

15.08.110 Term of life.

When authorized by the city council, a latecomer's agreement can be granted for a period of up to but not to exceed seven years. No extensions will be granted beyond the period of time established by the city council. The latecomer's agreement will expire at the end of the period of time established by the city council. (Ord. 1468 § 1, 2000).

15.08.120 Fees.

There shall be paid to the City of Pacific a nonrefundable processing fee in the amount as set forth in PMC 15.08.170. Payment of the full amount of the nonrefundable processing fee is due at the time of application. There shall be a fee for the administration processing and collecting of a latecomer's agreement, which fee shall be in an amount set forth in PMC 15.08.170. The administrative fee will be collected by deduction from each individual latecomer fee payment and the balance forwarded to the current holder of the latecomer's agreement pursuant to PMC 15.08.090. (Ord. 1468 § 1, 2000).

15.08.130 City not responsible.

By instituting the latecomer's agreement, the City of Pacific does not agree to assume any responsibility to enforce the latecomer's agreement. The final latecomer agreement recorded with the county or counties in which the properties

subject to the latecomer's agreement are located will be a matter of public record and will serve as a notice to the owners of the potential assessment should connection to the improvements be made. The holder of the latecomer's agreement has responsibility to monitor those parties connecting to the improvement. Should the City become aware of such a connection, it will use its best efforts to collect the latecomer's fee, but shall not incur any liability should it inadvertently fail to collect the latecomer's fee. (Ord. 1468 § 1, 2000).

15.08.140 Improvements constructed by developer.

Improvements may be installed by developer per approved plans following issuance of the construction permit and payment of applicable permit and development fees. The notification and appeal process established by this chapter may result in a decision by the city council that would alter the potential payment to the beneficiary of the latecomer's agreement. If the beneficiary proceeds to construction prior to either the preliminary or city council approval of the latecomer agreement following all appeals, the beneficiary does so at the beneficiary's own risk. (Ord. 1468 § 1, 2000).

15.08.150 Interest.

No interest rates are added to fees collected under private developer held latecomer agreements. (Ord. 1468 § 1, 2000).

15.08.160 Segregation and relief of latecomer fees.

- A. Segregation of Fees. The City shall grant a segregation of private developer held latecomer's fees if the property fronting the improvements legally subdivides by plat, short plat, binding site plan, etc. The burden of establishing the segregation by legal description, number of units, and map would be on the party owing the fee and not the City. The subdivider or petitioner of the segregation is required to pay a processing fee for staff work as set forth in PMC 15.08.170.
- B. Relief Due to Two Similar Facilities. The community development director or the director's designee, who shall be a licensed engineer, will consider relieving a parcel of a latecomer's fee/assessment if the property has a benefit from either (but not both) of two similar facilities. The community development director or designee will decide which facility benefits and/or is utilized by the parcel, based on sound engineering practices and policy considerations. The property's assessment will be that associated with the utilized facility. If there are no engineering or policy reasons that support the selection of one facility over the other, the City shall give the applicant the choice of facilities to utilize.
- C. Relief Due to Future Subdivision. At the time the latecomer's agreement is formed, and as a condition of the latecomer's agreement, the City may require that the assessment against a parcel be divided such that a single-family residential connection will be assessed based upon the size of a typical single-family residential lot in that area. The remainder of the cost

attributed to said site will be due at such time as the parcel develops further by either subdivision or increased density.

- D. Partial Release of Properties Due to Subdivision. The community development director or designee will consider relieving a parcel of the latecomer assessment if a subdivision of the property severed a linkage between a resulting lot and the street frontage containing the latecomer improvement(s). Relief may be granted so long as a proposed lot does not have direct access to, or front footage on, the street right-of-way containing improvement(s) and will not and cannot benefit from the improvements. (Ord. 1468 § 1, 2000).

15.08.170 Fee schedule.

- A. Nonrefundable Latecomer's Processing Fee.
 - 1. Five hundred dollars if the value of the improvements covered by the latecomer's agreement is less than \$20,000.
 - 2. One thousand dollars if the value of the improvements covered by the latecomer's agreement is at least \$20,000 and less than \$100,000.
 - 3. Two thousand dollars if the value of the improvements covered by the latecomer's agreement is \$100,000 or more.
- B. Latecomer's administration fee: 15 percent of total reimbursable amount to be recovered by developer, but not less than \$250.00.
- C. Nonrefundable appeal fee: \$500.00 for each protest.
- D. Recording fees: as expended by the City.
- E. Segregation fee: \$750.00. (Ord. 1468 § 1, 2000).

1.4 SCOPE OF WORK

1.4.1 Purpose

The purpose of the *PDS* is to ensure that public utility and transportation-related facilities constructed in the City of Pacific meet appropriate standards for safety, constructability, durability, and maintainability. These Standards are published in accordance with the *Revised Code of Washington* and accomplish the following:

- A. Provide clear and specific standards for construction or modification of facilities in the city right-of-way.
- B. Implement and administer the general development regulations contained in the City of Pacific land use codes.
- C. Ensure the design and construction of facilities in the city right-of-way complies with applicable laws, regulations, and standards of good engineering practice.
- D. Ensure that transportation-related projects incorporate non-motorized facilities as appropriate.

1.4.2 Administrative Interpretations and Revisions

It is recognized that administrative interpretation of these Standards will be required from time to time. Such interpretations are refinements or explanations of meaning or intent issued by the City Public Works Director. Requests for administrative interpretations must be submitted in writing to the Public Works Director.

1.4.3 Changes

The City reserves the right to make, at any time during the work, such alterations in the work as are necessary to satisfactorily complete the project including, but not limited to:

- A. Deleting any part of the work,
- B. Altering specifications, designs, or both,
- C. Altering the way the work is to be done,
- D. Adding new work,
- E. Ordering the Contractor to speed up or delay the work.

For projects bid by the City of Pacific, the Public Works Director will issue a written change order for any change.

1.4.4 Differing Site Conditions

The Contractor shall promptly, and before such conditions are disturbed, notify the Engineer in writing of:

- (1) pre-existing subsurface or latent physical conditions at the site differing materially from those indicated in approved plans, or
- (2) pre-existing unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this contract.

The City will promptly investigate the conditions. If the City finds that conditions are materially different, the City may suspend the permits and require the developer to submit new plans for approve based upon the new site conditions. If the City determines that differing site conditions do not exist the work may proceed as approved.

1.5 CONTROL OF WORK

1.5.1 Authority of Public Works Director

The Public Works Director shall have the power to:

- A. Administer provisions of these standards.
- B. Prepare and administer procedures implementing these standards.
- C. Prepare and publish, as necessary for public use, a procedures manual or manuals covering these standards.
- D. Close or restrict the usage of streets for a definite period of time as provided for the following:

1. Drive access/culvert enclosure/curb cut – authorizing residential access (single-family or duplex) or temporary access for short-term activities such as construction to a city street.
2. Subdivision driveway access – authorizing residential access (single-family or duplex) to a city street where a combined review to establish lot access requirements has previously been conducted as part of the subdivision review process and the subdivision developer is established as responsible for requirements related to driveway access.
3. Temporary access – authorizing construction and temporary, nonexclusive use of an unopened or primitive city street right-of-way for short-term activities such as construction or logging.
4. Private street access – authorizing the construction and permanent, nonexclusive use of a privately maintained street within the city right-of-way.
5. Major construction authorizing major land development related construction (including franchised utilities). These activities range from developer-financed frontage improvements, street restoration and utility extensions to developer-financed and built comprehensive street improvements, access for development of abutting industrial/commercial property, and major city street intersections.
6. Minor construction – authorizing minor land development related construction (including franchised utilities) including, but not limited to, paved aprons, minor curbside work, modification of street side features, and minor private street intersections. Construction activities and associated thresholds eligible to be included under a minor construction permit shall be detailed in Department procedures. Construction activities exceeding minor construction permit thresholds shall be processed as a major construction.
7. Blanket utility construction – a permit granting a franchised utility purveyor to cover a series of activities in the city rights-of-way. Such activities are of a less disruptive nature than normal utilities construction. Construction activities and associated thresholds eligible to be included under a blanket permit shall be detailed in Department procedures. Construction activities exceeding blanket utility permit thresholds shall be processed as a major utility construction.
8. Major utility construction – involving major construction, disturbance, and restoration of the affected city street. All work performed under any permit issued under these standards shall conform to the *PDS*.

1.5.2 Authority of City Engineer

The City Engineer shall have authority to enforce these Standards as well as other referenced or pertinent specifications.

1.5.3 Authority of Inspectors

A. General

The City shall exercise full right of inspection of all excavating, construction, and other invasions of City rights-of-way or public easements. The Public Works Director or designated official shall be notified on the working day prior to commencing any work in the City's rights-of-way or public easements. The Public Works Director and/or his authorized representative is authorized to and may issue immediate stop work orders in the event of non-compliance with this chapter and/or any of the terms and provisions of the permit or permits issued.

B. Final Inspection

Prior to final approval of construction, a visual inspection of the job site will be made by the City. Restoration of the area shall be complete with all improvements being restored to substantially their original or superior condition. Final approval of construction shall not be given earlier than thirty (30) days after satisfactory completion of construction, as witnessed by the City.

A project is considered final when record drawings, bills of sale, right-of-way dedications, easements, bonds, and maintenance agreements have been submitted to and approved by the City, and a letter of acceptance is issued by the City to the party responsible for the project.

No water meters will be released for any lot or building served by a project until final acceptance has been granted.

C. Construction Control

Work performed for the construction or improvement of City roads and utilities, whether by or for a private developer, by City forces, or by a City contractor, will be done to the requirements established by the City and in accordance with approved plans. No work will be started until plans are approved. Any revision to such plans will be approved by the City before being implemented. Failure to receive the City's written approval may result in removal or modification of construction at the contractor or developer's expense to bring it into conformance with approved plans.

1.5.4 Plans and Specifications

A. Specifications.

The standard specifications of public works for the City will be the most recent edition of the WSDOT/APWA Standard Specifications including all supplements, appendices, and all subsequent additions and editions prepared by the Washington State Chapter of the American Public Works Association (APWA) and the specifications of the City of Pacific Public Works Department titled *Pacific Development Standards*.

B. Improvement Plans.

Prior to the commencement of construction within public rights-of-way or the installation of any public street or utility improvements within a development, the developer will submit a complete set of design drawings to the Public Works

Department for review and approval and permits will be paid for and issued. Design drawings for the construction of streets, utilities, and other public works will be prepared in accordance with these *Pacific Development Standards*.

1.5.5 Deviation from The Plans

The Contractor is responsible for all of the project surveying including lines, grades, slopes, and cross-sections. All staking shall be performed by a licensed profession qualified to do the work. These stakes and marks will govern the Contractor's work. The Contractor shall take full responsibility for detailed dimensions, elevations, and slopes measured from them.

All work performed shall be in conformity with the lines, grades, slopes, cross sections, and dimensions as shown in the Plans, or as staked. If the Plans, Special Provisions, or these Specifications, state specific tolerances, the work shall be performed within those limits. The City's decision on whether the work is in conformity shall be final.

The Contractor shall not deviate from the approved plans and working drawings unless the City approves in writing.

1.5.6 Inspection of Work and Materials

Work performed within the public right-of-way, or outside the public right-of-way as mandated by the City land use codes, shall comply with the approved plans and specifications and these Standards. The Public Works Director must approve any revision to construction plans before implementation.

It is the responsibility of the developer, contractor, or their agents to have an approved set of plans, permits, and a copy of these Standards on the job site wherever work is being accomplished.

It is the responsibility of the developer, contractor, or their agents to notify the City in advance of the commencement of any authorized work in accordance with permit requirements. A preconstruction conference and/or field review will be required by the Public Works Department (facilitated and attended by City staff) before the commencement of any work on significant projects.

As requested by the City and outlined in these standards, the applicant/developer will be required to provide tests to substantiate the adequacy and/or placement of construction materials.

The Public Works Director will be responsible for the supervision and inspection of all development improvements and will establish and collect a fee as set forth in the current fee schedule as adopted by the City Council. All fees will be paid prior to acceptance of any development project.

All work performed within the public right of way or easements or as described in these standards, whether by or for a private developer, by City forces, or by a City contractor, will be done to established requirements outlined by the City and in accordance with the WSDOT/APWA Standard Specifications, any approved plans, and these standards. Any revision to construction plans must be approved by the City before being implemented.

The City will have authority to enforce these standards as well as other referenced or pertinent specifications. The City will appoint project engineers, assistants, and inspectors as necessary to inspect the work, and they will exercise such approved authority as the City may delegate.

All specific inspections, test measurements, or actions required of all work and materials are set forth in their respective chapters herein. Tests will be performed at the developer or contractor's expense.

Failure to comply with the provisions of these standards may result in stop work orders, removal of work accomplished, or other penalties as established by ordinance.

1.5.7 Removal Of Defective And Unauthorized Work

It shall be unlawful to place or maintain any structure, object, or feature within the right-of-way except where done pursuant to a contract with the City, permission granted by the Public Works Department pursuant to this chapter, or other specific legal authority.

It shall be unlawful for anyone other than the Public Works Department to spill, dump, or otherwise deposit any material upon a city right-of-way except where done pursuant to contract with the City, permission granted by the Public Works Department as provided in this chapter, or other legal authority. This section shall be supplementary to state law as provided.

The City Engineer or designee may remove any structure, object, feature, or material placed or spilled upon, over, or beneath the surface of any right-of-way by other than the Public Works Department unless installed and maintained pursuant to a contract with the City, permission by the Public Works Department as provided in this chapter, or other specific legal authority. The costs of any removal shall be the sole responsibility of the installer of such structure, object, feature, or material and the successors in ownership of any portion of such structure, object, feature, or material. The City may take any steps that it deems appropriate to collect the costs of such removal.

1.5.8 Final Inspection

The City will not make the final inspection until the physical work required by the permit, including final cleanup and all extra work ordered by the City, has been completed.

1.5.9 Final Acceptance

The City Council will be responsible for any acceptance and dedication of public improvements created by private funding. Deferral of public improvements in subdivisions is governed by the *Pacific Municipal Code*.

1.5.10 Cooperation With Other Contractors

The permittee shall be responsible for minimum interference with:

- Traffic Routing
- Fire Facility Clearance
- Adjoining Property

- Utility Facilities
- Natural Surface Drainage

Prior to construction, these items are to be discussed with the City Public Works Department, and/or City Fire and Police Departments and/or the City Building Inspector, and special provisions may be included in any applicable City Permit(s).

1.5.11 Notices and Orders of the City Engineer

- A. Whenever the Public Works Director has inspected or caused to be inspected any work and has found and determined that such work is not in compliance with the code, he/she shall commence proceedings to cause the repair of the work.
- B. The Public Works Director shall issue a notice and order directed to the contractor/applicant/owner. The notice and order shall contain:
 1. The street address and a legal description sufficient for identification of the site and area where the work is located.
 2. A statement that the Public Works Director has found the work to be not in compliance, with a brief and concise description of the conditions found to render the work in violation under the provisions of this code.
 3. A statement of the action required to be taken as determined by the Public Works Director.
 4. Statements advising that if any required repair work is not commenced within the time specified, the Public Works Director (1) will order the site to be posted to prevent further work, and (2) may proceed to cause the work to be done and charge the costs against the property or its owner.
 5. Statements advising (1) that any person having any record title or legal interest in the project may appeal from the notice and order or any action to the Public Works Director, provided the appeal is made in writing as provided in this code and filed with the Public Works Director within three days from the date of service of such notice and order; and (2) that failure to appeal will constitute a waiver of all rights to an administrative hearing and determination of the matter.

1.6 CONTROL OF MATERIALS

1.6.1 Approval of Materials

Only the materials presented in these Standards may be used. All equipment, materials, and articles incorporated into the permanent work:

- A. Shall be new, unless otherwise approved in writing;
- B. Shall meet the requirements of the City Standards;

- C. May be inspected or tested at any time during their preparation and use; and
- D. Shall not be used in the work if they become unfit after being previously approved.

If the Contractor proposes to use materials other than those presented in these Standards, a submittal must be made to the City 10 working days prior to use. The submittal will consist of a manufacturer's information, including, but not limited to:

- A. Applicable industry standards.
- B. Testing methods and procedures.
- C. Manufacturer certification that the proposed material is equivalent to that required by City Standards.

1.6.2 Manufacturers Certificate of Compliance.

Certificates of Compliance for products proposed for use within the City will be provided upon request.

1.6.3 Handling or Storing of Materials

The Contractor shall protect materials against damage from careless handling, from exposure to weather, from mixture with foreign matter, and from all other causes, during storage and handling. The City will reject and refuse to test materials improperly handled or stored.

1.7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

1.7.1 Laws to be Observed

The contractor shall comply with the applicable laws of The City of Pacific, King County, Pierce County, the State of Washington, and the United States including, but not limited to:

- Permits and licenses for operating or conducting business within the jurisdiction
- Employment compensation and safety
- Sales and use taxes
- Liability insurance

Upon request, the City shall be furnished with copies of all licenses and permits.

1.7.2 Permits and Licenses

Permits, approvals, or agreements may be required by the City or other jurisdictions prior to initiating any activities subject to these Standards. Questions regarding such permits, approvals, or agreements should be directed to the City's Department of Planning and Community Development and appropriate.

Prior to issuance of any permits to work within the public right-of-way, a performance of work surety will be submitted and approved by the Public Works Director. This surety is in addition to any contractor licenses or insurance requirements.

No building permit will be issued until all public improvements are completed and final acceptance granted, or with the approval of the Director; appropriate surety for minor elements may be accepted and performance bond as outlined above posted with the City in an amount equal to the cost of the public works improvements is posted with the City. No Certificate of Occupancy will be issued until all public works improvements are completed and approved, unless otherwise allowed by the Public Works Director Department and the Public Works Director.

Prior to issuance of a certificate of occupancy in occupancies other than those located in subdivisions, improvements will be completed and only minor elements remaining may be guaranteed by the appropriate surety approved by the Public Works Director.

1.7.3 Bonding

Where authorized by the City Code, securities may be required by the Public Works Director to guarantee the performance of or to correct permitted work.

Bonds or other allowable securities will be required by the City to guarantee the performance of work within existing public rights-of-way or maintenance of required public infrastructure intended to be offered for dedication as a public improvement. The type and amount of security shall be pursuant to the City Code, or if not specified, at the discretion of the Public Works Director.

Types of securities include, but are not limited to, cash deposits, assigned savings, and bonds. The Public Works Director shall release securities upon satisfactory completion of the required work or any previously specified stipulations related to the required work.

Street and Utility Construction

Developers and contractors performing street and/or utility work within the public right-of-way or publicly owned easement(s) shall be prepared to satisfy the following two bonding requirements.

- A. Performance Bond. approved as to surety by the Public Works Director and as to form by the City Attorney, which bond shall be conditioned upon faithful completion of that portion of the work performed pursuant to the permit which will require completion by the City should the permittee or his contractor default. The amount of such bond shall be 150 percent of the approved value of the improvements or \$10,000, whichever is greater. The City engineer shall review and provide approval, as may be applicable of the submitted amount.
- B. Maintenance Bond. All work shall be guaranteed by the Contractor for a two-year period from the time of inspection and final approval of the construction by the City.

Landscaping

Landscaping bond requirements shall be provided per *Pacific Municipal Code 20.70.160*.

20.70.160 Bonds/security requirements. (Landscaping)

- A. If landscaping is not installed prior to an application for a temporary or final certificate of occupancy, and the director determines that the landscaping was not or cannot be installed due to weather or other circumstances beyond the control of the applicant, the director may approve deferral of landscaping installation upon the filing of a landscape bond, letter of credit, or other suitable financial guarantee that is approved by the director. The amount of the landscape bond or other financial guarantee shall equal 150 percent of the estimated cost of the required landscaping, irrigation and labor. The cost estimate shall be determined by the director.
- B. Prior to issuance of a final certificate of occupancy, a maintenance bond or other acceptable financial guarantee equal to 30 percent of the replacement cost of the required landscaping shall be submitted. The replacement cost shall be determined by the director. The bond shall be maintained for a three-year period, at which point the director shall determine if the bond shall be released or is needed for maintenance within the landscaped areas. (Ord. 1505 § 13, 2001; Ord. 1361 § 13, 1998).

1.7.4 Hold Harmless Clause

The Developer shall indemnify and hold harmless the City and the City Engineer, and their agents and employees, from and against all claims damages, losses, and expenses, including attorney's fees, arising out of or resulting from the performance of the work, and shall, after reasonable notice, defend and pay the expense of defending any suit and will pay any judgment, provided that any such claim, damage, loss, or expense:

- i. is attributable to bodily injury, sickness, disease, or death, or to injury or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom, and
- ii. is caused in whole or in part by any negligent act or omission or by any other action giving rise to strict liability of the Developer, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

In any and all claims against the City or City Engineer, or any of their agents or employees, by any employee of the Developer, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation under this article shall not be limited in any way by any limitation on the amount or type of damages, compensation, or under workman's compensation acts, disability benefit acts, or other employee's benefit acts.

The obligations of the Developer under this article shall not include the sole negligence of the City or the City Engineer.

1.7.5 Responsibility for Damage

The City and all officers and employees of the City, will not be responsible in any manner: for any loss or damage that may happen to the work or any part; for any loss of material or damage to any of the materials or other things used or employed in the performance of work; for injury to or death of any persons, either workers or the public; or for damage to the public for any cause which might have been prevented by the Contractor, or the workers, or anyone employed by the Contractor.

The Contractor shall be responsible for any liability imposed by law for injuries to, or the death of, any persons or damages to property resulting from any cause whatsoever during the performance of the work, or before final acceptance.

Subject to the limitations in this section, the Contractor shall indemnify, defend, and save harmless the City and all officers and employees of the City from all claims, suits, or actions brought for injuries to, or death of, any persons or damages resulting from construction of the work or in consequence of any negligence regarding the work, the use of any improper materials in the work, caused in whole or in part by any act or omission by the Contractor or the agents or employees of the Contractor during performance or at any time before final acceptance.

The Contractor shall bear sole responsibility for damage to completed portions of the project and to property located off the project caused by erosion, siltation, runoff, or other related items during the construction of the project.

1.7.6 Temporary Water Pollution and Erosion Control

In an effort to prevent, control, and stop water pollution and erosion within the project, thereby protecting the work, nearby land, streams, and other bodies of water, the Contractor shall perform on-site grading in a manner to minimize off-site erosion and siltation in conformance with all statutory requirements, permits, and approved plans and in strict accordance with all Federal, State, and local laws and regulations governing waters of the State, as well as permits acquired for the project.

The Contractor shall perform all temporary water pollution/erosion control measures shown in the Plans, specified in the Special Provisions, proposed by the Contractor and approved by the Engineer, or ordered by the Engineer as work proceeds.

The Contractor shall also bear sole responsibility for any pollution of rivers, streams, ground water, or other waters which may occur as a result of construction operations.

1.7.7 Protection and Restoration of Property

The developer or contractor shall schedule and control work so as to comply with all applicable provisions of the City of Pacific land use codes and applicable state and federal codes to prevent any hazards to public safety, health, and welfare.

On existing streets, two-way traffic for vehicles, bicycles, and pedestrians shall be maintained at all times unless detour plans or lane closures have been approved in advance by the Public Works Director.

Streets, bikeways, and pedestrian facilities shall be kept free of dirt, debris, or any obstructions. Pedestrian and vehicular access to occupied buildings shall be maintained except where written approval from the building owner has been obtained.

1.7.8 Utilities

All developers/contractors are responsible for timely notification of all utilities in advance of any construction in right of way or utility easements. The utilities one-call Underground Location Center phone number is 1-800-424-5555. A minimum of three working days' advance notice is required.

Should the work of a developer/contractor result in an emergency street or utility shut down during nonworking hours, the direct overtime costs of responding city personnel will be billed to the responsible party. The Pacific Public Works 24-hour emergency telephone numbers are (253)929-1110 during work hours and (253)333-4522 after work hours.

1.7.9 Public Liability and Property Damage Insurance

The Developer shall not commence work until he has furnished evidence of insurance required; nor shall the Developer allow any contractor or subcontractor to commence work on his contract or subcontract until the same insurance requirements have been complied with by such contractor or subcontractor.

Companies writing the insurance under this article shall be licensed to do business in the State of Washington or be permitted to do business under the Surplus Line Law of the State of Washington.

The Developer shall maintain, during the life of the Contract, Comprehensive General and Automobile Liability Insurance. The insurance shall include, as Additional Named Insured, the City. All insurance policies shall be endorsed to provide that the policy shall not be canceled or reduced in coverage until after ten (10) days prior written notice, as evidenced by return receipt of registered letter has been given to the City.

Comprehensive General Bodily Injury and Property Damage Insurance shall include:

- A. Premises & Operations;
- B. Developer's Protective Liability;
- C. Products Liability, including Completed Operations Coverage
- D. Contractual Liability
- E. Broad Form Property Damage;

Comprehensive Automobile Bodily Injury and Property Damage Insurance shall include:

- i. All owned automobiles;
- ii. Non-owned automobiles;
- iii. Hired automobiles.

The insurance coverages listed above shall protect the Developer from claims for damages for bodily injury, including death resulting therefrom, as well as claims for property damage, which may arise from operations under this contract, whether such operations be by himself or by any subcontractor or by anyone directly employed by either of them, it being understood that it is the Developer's obligation to enforce the requirements of this article as respects any contractor or subcontractor.

Comprehensive General and Automobile Liability Insurance shall provide coverage for both bodily injury and property damage, as follows:

- A. Comprehensive General and Automobile Bodily Injury Liability Insurance on an occurrence basis of not less than One Million dollars (\$1,000,000.00) for bodily injury, sickness or disease, including death resulting therefrom, sustained by each person; and for limits of not less than One Million Dollars (\$1,000,000.00) for each occurrence.
- B. Comprehensive General Property Damage Liability Insurance on an occurrence as is for limits of not less than One Million Dollars (\$1,000,000.00) for damage to or destruction of property, including loss of use thereof, arising from each occurrence, and in an amount of not less than One Million Dollars (\$1,000,000.00) in aggregate.

Comprehensive Automobile Property Damage Liability Insurance on an occurrence basis for limits of not less than One Million Dollars (\$1,000,000.00) for damage to or destruction of property, including loss of use thereof, arising from each occurrence.

Comprehensive Liability Insurance shall include the City and the as Additional Named Insured.

Comprehensive General Property Damage Liability Insurance shall include liability coverage for damage to or destruction of property of other, including loss of use of property damaged or destroyed, and all other indirect and consequential damage for which liability exists in connection with such damage to or destruction of property of others, and shall include coverage for:

- ("X") Injury to or destruction of any property arising out of blasting or explosion;
- ("C") Injury to or destruction of any property arising out of the collapse of/or structural injury to any building or structure due:
 - 1. to excavation, including borrowing, filling or backfilling in connection therewith, or tunneling, pile driving, coffer-dam work or caisson work, or
 - 2. to moving, shoring, underpinning, raising or demolition of any building or structure or removal or rebuilding of any structural support thereof.
- ("U") 1. Injury to or destruction of wires, conduits, pipes, mains, sewers or other similar property or any apparatus in connection therewith, below the surface of the ground, if such injury or destruction is caused by and

occurs during the use of mechanical equipment for the purpose of excavating or drilling, or

2. Injury to or destruction of property at any time resulting therefrom.

There shall be included in the liability insurance, contractual coverage sufficiently broad to insure the provisions of "Hold Harmless Clause."

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

In the event the Developer is required to make corrections on the premises after the work has been inspected and accepted, he shall obtain, at his own expense, and prior to commencement of any corrective work, full insurance coverage, as specified herein.

1.7.10 Workman's Compensation

The Developer shall furnish, upon request by the City, certified copies of the insurance policy or policies within two weeks of the City's request.

The Developer shall maintain Workmen's Compensation Insurance or, as may be applicable, Maritime Workmen's Insurance, as required by state or federal statute for all of his employees to be engaged in work on the Project and, in case any such work is sublet, the Developer shall require the contractor or subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work. The Developer's Labor & Industries account number shall be noted in the Proposal in the space provided.

In the event any class of employees engaged in work at the site of the Project is not covered under the Workmen's Compensation Insurance or Maritime Workmen's Insurance, as required by state and federal statute, the Developer shall maintain and shall cause each contractor or subcontractor to maintain Employer's Liability Insurance with a private insurance company for limits of at least One Hundred Thousand Dollars (\$100,000.00), each person, and Three Hundred Thousand Dollars (\$300,000.00), each accident, and furnish satisfactory evidence of same.

1.7.11 Public Convenience and Safety

The permittee shall be responsible for minimum interference with:

- Traffic Routing
- Fire Facility Clearance
- Adjoining Property
- Utility Facilities
- Natural Surface Drainage

Prior to construction, these items are to be discussed with the City Public Works Department, and/or City Fire and Police Departments and/or the City Building Inspector, and special provisions may be included in any applicable City Permit(s).

1.8 TRAFFIC CONTROL

The developer/contractor 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. The Traffic Control Plan will be submitted to and approved by the City prior to the start of construction.

City utilities constructed within Pierce or King County rights-of-way will follow all traffic control requirements as set forth by Pierce and King County Department of Public Works and MUTCD.

Signs must be legible and visible and will be removed at the end of each workday if not applicable after construction hours.

All necessary and/or required traffic control devices will be in place prior to the beginning of the project construction, or on a daily basis during project construction.

When road closures and detours cannot be avoided, the contractor/developer will notify the Department of Community Planning and Development Construction Inspectors within a minimum of 48 hours. The City may require a detour plan to be prepared, submitted, and approved prior to closing any portion of a City roadway.

1.9 PROFESSIONAL QUALIFICATIONS

Professionals in the fields of engineering, architecture, or surveying who prepare or are responsible for the preparation of plans, drawings, specifications, calculations, technical reports, etc., for the purpose of obtaining City permits or approvals, shall be registered or authorized to practice in the State of Washington in accordance with RCW Title 18. Registration or authorization to practice shall be in the specific technical area pertinent to the documents being prepared.

Exceptions to this requirement are specified in RCW Section 18.43.130.

1.10 DESIGN STANDARDS

Detailed plans, prepared by a licensed professional, must be submitted to the City for plan review and approval prior to the commencement of any construction. 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 specific Standards. An acceptance by the City does not relieve the applicant or the applicant's engineer from responsibility for ensuring that all facilities are safe and that calculations, plans, specifications, construction, and record drawings comply with normal engineering standards, these Standards, and applicable federal, state, and local laws and codes. Final plans will be approved by the Public Works Director or their designee, prior to the start of construction.

Materials proposed for use in construction of publicly owned or publicly maintained utilities must be in conformance to approved City of Pacific material standards in place at the time of submittal.

Plans and profile drawings are required for all proposed transportation improvements, storm drainage facilities, and sewer and water improvements. For specific minimum requirements, see the requirements listed in Sections 3 through 12 of this document. On occasion, the scope of a project may not require engineered plans and can instead be handled via a Right-of-Way Obstruction Permit. This option will be decided by the Public Works Director.

Specifications will be required and submitted with the plans if General Notes do not adequately cover the project requirements.

1.11 DEVIATION FROM STANDARDS

These Standards represent appropriate practice under most conditions, based on past experience in the City of Pacific and other jurisdictions. They are intended to provide facilities that are safe and appropriate for use in the City of Pacific.

Situations will arise where alternatives to these Standards may better accommodate existing conditions, overcome adverse topography, or allow for more cost-effective solutions without adversely affecting safety, operations, maintenance, or aesthetics.

Accordingly, requests for deviations from these Standards will be considered by the Public Works Director. Such requests must be submitted to include supporting information demonstrating compliance with the following criteria:

- A. The deviation will achieve the intended result with a comparable or superior design and quality of improvement; and
- B. The deviation will not adversely affect safety or operations; and
- C. The deviation will not adversely affect maintenance and its associated cost; and
- D. The deviation will not adversely affect the aesthetic appearance; and
- E. The deviation will not impact future expansion, development, or redevelopment.

It is recognized that the need for and timing of a deviation request may not be predictable. Requests should be submitted as soon as the need becomes known. No request will be considered until an application for a permit or other approval has been submitted. Known deviation requests that affect lot yield or scope of development must be decided prior to any public hearing or official decision on the application. This is important for public notice and participation in the decision process.

Deviations that affect engineering design, to the extent they are known, must be decided prior to submittal of construction plans. This will prevent wasted effort in the preparation of plans with non-standard features that cannot be approved.

Any deviation request concerning a provision of the International Fire Code requires concurrence by the Valley Regional Fire Authority Fire Marshal. Documentation of concurrence by the Fire Marshal must be submitted with the request.

The Public Works Director is the final authority on all deviation requests. The Public Works Director reserves the right to direct or deny a deviation from these Standards at any time in the interest of public health, safety, and welfare.

1.12 STREET IMPROVEMENTS, DRAINAGE FACILITIES, WATER, SEWER, AND FRANCHISE UTILITIES

- A. Erosion and Sediment Control. The developer will provide erosion and sedimentation control through best management practices of the *King County Surface Water Design Manual* (KCSWDM), latest version, and Chapter 3 of the *Pacific Development Standards*.
- B. Transportation. The developer will install transportation improvements in accordance with the provisions of Chapter 4 of the *Pacific Development Standards*.
- C. Storm Drainage. The developer will provide for the treatment, storage, and disposal of surface drainage through a storm drainage system designed to the KCSWDM, latest version, and Chapter 5 of the *Pacific Development Standards*.
- D. Water. The developer will install potable and fire flow water facilities in accordance with the provisions of Chapter 6 of the *Pacific Development Standards*.
- E. Sewer. The developer will install sewer facilities in accordance with the provisions of Chapter 7 of the *Pacific Development Standards*.
- F. Illumination. The developer will install illumination facilities in accordance with the provisions of Chapter 8 of the *Pacific Development Standards*.
- G. Landscaping. The developer will install landscaping features in accordance with the provisions of Chapter 9 of the *Pacific Development Standards*.
- H. Street Trees. The developer will install street trees in accordance with the provisions of Chapter 10 of the *Pacific Development Standards*.
- I. Franchise or Private Utilities. The franchise or private utility shall provide design and plans in accordance with the provisions of Chapter 11 of the *Pacific Development Standards*.
- J. Fire Apparatus Access Roads. The developer will install fire apparatus road improvements in accordance with the provisions of Chapter 12 of the *Pacific Development Standards*.
- K. Capacity and Routing. The capacities and dimensions of water mains, sewerage, and drainage facilities will be adequate to provide for the future needs of other properties in the general vicinity. Said facilities will be extended in public rights-of-way or easements to and along each frontage of a development or along alternative routes to the boundaries of adjoining properties as approved by the Public Works Director. Over-sizing of facilities may be required of the developer. The City may participate in the cost of over- sizing if sufficient funds are available.

1.13 DRAFTING STANDARDS

- A. All plans submitted for either design approval or permanent record will be free of photographs, stick-ons, or shading film. Hatching may be acceptable if the pattern is not excessively dense.
- B. Design drawings will be submitted on clean, legible bond format. All drawings will be on 24-inch by 36-inch or 22-inch by 34-inch sheet size. Original sheets will be good-quality reproducible bond or Mylar. Original drawings of the approved plan shall be on Mylar and will become the property of the City of Pacific.

Plat Drawings for recording the subdivision of land shall be prepared on 18-inch by 24-inch sheet size.

- C. Minimum text height will be at least 0.08 times the scale factor (i.e., 1 inch = 20 feet scale; minimum text will be $20 (0.08) = 1.6$ units). Minimum nominal text size will be 1/8 inch.
- D. No engineering plans will be accepted with architect's scale.
- E. Street drawings will be either 1 inch = 5 feet, 1 inch = 10 feet, 1 inch = 20 feet, or 1 inch = 30 feet horizontal with vertical scale not to exceed 1 inch = 10 feet. Utility drawings may be accepted at 1 inch = 50 feet or 1 inch = 40 feet if they are legible. A scale ratio no greater than 10H:1V is preferred for all plan and profile drawings.
- F. Plans will show all existing and proposed monuments. All monumentation will be described using current Washington State Plane North coordinates. Centerline of roadways, easements (with type and dimensions), and other pertinent data will be referenced to existing monuments.
- G. A project cover sheet shall be included with all plans containing:
 - 1. Vicinity Map
 - 2. Legend of existing and proposed project elements
 - 3. Sheet Index
 - 4. Project data: Section, Township, Range; Zoning; Number of Lots or Building Size(s); Number of Parking Spaces; etc.
 - 5. City Approval Block (to be included on all sheets)
- H. All existing features (pipes, curbs, power poles, etc.) are to be produced with a fine line 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. The City GENERAL CONSTRUCTION NOTES shall be included on the plans. Any note that is not applicable shall have a line drawn through it, but it shall be included on the Plans.

In addition, please refer to the plan checklist in the appendices.

GENERAL CONSTRUCTION NOTES

1. All workmanship and materials will be in accordance with City of Pacific Standards, City of *Pacific Municipal Code*, Ordinances and City Council or Hearing Examiner conditions of Project Approval. These documents are supplemented by the most current edition of the *State of Washington Standard Specifications for Road, Bridge and Municipal Construction and Standard Plans*.
2. All materials used for construction shall be new and undamaged and shall be made available for inspection and approval by the City of Pacific prior to installation. The contractor shall provide the City of Pacific with a Certificate of Materials from the supplier, if requested. All work and materials that do not meet the above specifications must be removed as directed by the Project Inspector.
3. The contractor will be responsible for all traffic control in accordance with *U.S. Department of Transportation Manual on Uniform Traffic Control Devices* (MUTCD). Prior to disruption of any traffic, traffic control plans will be prepared and submitted to the City for approval. No work will commence until all approved traffic control is in place. All flaggers must have Flagging Certificates and must have attended a flagging course or an off duty police officer is required. The job will be shut down if any uncertified people are flagging. A stop work order will be given and work will not proceed until a certified person is flagging.
4. Temporary erosion/water pollution measures shall be required in accordance with Section 1-07.15 of the WSDOT/APWA Standard Specifications and applicable requirements of the KCSWDM.
5. During construction, all public streets adjacent to the project shall be kept clean of material deposits resulting from on-site construction, and existing structures shall be protected.
6. The developer and the contractor shall comply with all other permits and other requirements by the City of Pacific or other governing authority or agency as may be applicable.
7. A pre-construction meeting shall be held with the City prior to the start of construction. The contractor shall provide the City with a construction schedule and a copy of all permits issued by Agencies other than the City.
8. A copy of the approved Plans shall be available on the site at all times during construction.
9. All project elements shall be staked by a licensed professional qualified to perform the work.
10. The contractor shall call underground locate line 1-800-424-5555 minimum 48 hours prior to any excavations. The locations of underground utilities are shown in an approximate way only and have not been independently verified

by the owner or its representatives. The contractor shall determine the exact location of all utilities prior to commencing work, and agrees to be fully responsible for any damage which might be occasioned by the contractor's failure to exactly locate preserve any and all underground utilities. The City, the owner, and the engineer shall be notified immediately if any conflict exists.

11. All utility trenches excavated in the right-of-way shall be backfilled with 5/8-inch crushed rock. The trenches shall be backfilled and compacted to 95 percent density in accordance with WSDOT 7-08.3(3).
12. The City of Pacific allows work from 7:00 A.M. to 7:00 P.M., seven days a week. If work is done on weekends, please inform the City of Pacific so that an Inspector can be available on site. Contractor will be billed for Overtime.
13. INSPECTION: All aspects of this project will be inspected including piping, backfill, sub-grade, concrete and asphalt, as well as forms, curb, gutter and sidewalk. If a portion gets backfilled before inspection, the contractor will dig up that portion for inspection. **24-HOUR NOTICE REQUIRED.** Know the schedule and let the City know. Call 48-hours before the following:
 - a. For inspection, contact (253) 929-1110.
 - b. Prior to work start-up
 - c. Prior to any utility construction in the right of way.
 - d. Prior to pouring cast-in-place concrete structures.
 - e. Prior to placing any crushed rock on roadway sub grade.
 - f. Prior to placing curb, gutters and sidewalks.
 - g. Prior to asphalt paving.
14. All compaction test shall be approved by the City of Pacific Engineer and/or Inspector prior to placing of crushed surfacing, asphalt, curb, gutter, sidewalk (Including trench restoration when test may be required in each lift).
 - a. Items to be compaction tested will include the pipe bedding (Section 7-08.3(1)C), Backfill (Section 7-08.3(3) and sub-grade for surfacing (Section 2-06.3(2)) and asphalt (Section 5-04.3(10)B).
 - b. City of Pacific may require additional tests on sub-grade, trenches, concrete, or asphalt. The costs of testing shall be paid for by the developer.
 - c. Roadway embankment and sub-grade construction:
 - i. Crushed Surfacing shall be compacted to 95 percent of maximum density. No recycled material allowed.
 - ii. Embankment and sub grade must be compacted to 95 percent of maximum density.

- iii. Proper moisture must be maintained throughout placing and compacting.
- iv. Compaction testing to be performed by an independent lab. Use a “Modified Proctor.”
- d. Trenches in developed right-of-way:
 - i. See City of Pacific Standard Construction Details and Section 7 of the current WSDOT Specifications for Road, Bridge and Municipal Construction.
 - ii. Pipe zone shall be compacted to 90 percent of maximum density.
 - iii. Trench zone shall be compacted to 95 percent of maximum density in 12-inch lifts.
 - iv. Crushed Surfacing shall be compacted to 95 percent of maximum density.

15. RESTORATION OF RIGHT-OF-WAY:

- a. Contractor must leave the right-of-way, equal to existing or better condition
- b. Place compacted topsoil (Section 9-14.1(1), (2) and (3)) and seed all areas disturbed by excavation. (Section 9-14.2). All drainage systems must be fully cleaned, restored, and operational before final acceptance. (Section 7-07.3).

16. FINAL INSPECTION AND ACCEPTANCE:

- a. See Section 1-05.11.
- b. When Contractor has completed all of the work on the approved plans, the contractor will notify the City. The City Engineer, City Inspector, Contractor, and other City of Pacific Departments will walk the site and create a punch list. The Contractor will complete the punch list and check off each item, then return it to the Inspector for re-inspection. The Inspector will verify that items on walk through are completed.
- c. The City will not make the final inspection until the physical work required by the contract and approved plans, including final cleanup and all work ordered by the City Engineer, has been completed.
- d. Final approval of the project will not be granted until “as built” drawings (both digital and hard copy) have been received and approved by the City.

1.14 PLAN REVIEW

All plans, reports, and design calculations are to be submitted to the Public Works Department. Any necessary easements, dedications, contracts, agreements, bonds, or variance requests will be submitted for review along with the plans. A completeness check of the plans will be made by Public Works Department staff. If the plans meet the minimum requirements as to context, they

will be routed to the appropriate City staff or consultant and the plan review process begins. Review fees will be billed based on time and materials for City staff and consultants.

1.15 PERMITS AND VARIANCES

1.15.1 Permits And Variances

Before any person, firm, or corporation will commence or permit any other person, firm, or corporation to commence any work to grade, pave, level, alter, construct, repair, remove, excavate, or place any pavement, sidewalk, crosswalk, curb, driveway, drain, sewer, water, conduit, tank, vault, street banner or any other structure, utility or improvement located over, under or upon any public right of way or easement in the City of Pacific, or place any structure, building, barricade, material, earth, gravel, rock, debris or any other material or thing tending to obstruct, damage, disturb, occupy, or interfere with the free use thereof or any improvement situate therein, or cause a dangerous condition, an appropriate permit will be obtained from the Public Works Department. A separate permit will be obtained for each separate project.

A. Permit Process

1. No person, firm, or corporation shall commence work on the construction, alteration, or repair of any facility located either in the public right-of-way or a public easement without any necessary permit(s) first having been obtained from the City.
2. Any party requesting such permit shall file written application with the City at least ten (10) working days before construction is proposed to start. Such application shall be made on a standard City form provided for that purpose.
3. The City may require, at their discretion, the filing of any other information when in their opinion such information is necessary to properly enforce City Code(s).
4. No permit shall be issued until the proposed work has been approved by the appropriate official. Adjudication of disagreements regarding approvals shall be made by the Public Works Director and his decision shall be final.
5. No plan shall be approved nor a permit issued where it appears that the proposed work, or any part thereof, conflicts with the provisions of any ordinance of the City of Pacific, nor shall issuance of a permit be construed as a waiver of the Zoning Ordinance or other ordinance requirements concerning the plan.
6. A fee of an amount as designated by City code shall accompany all applications for permits.

B. Validity of Permit

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.

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

C. Expiration

16.30.060 Permit expiration.

- A. This section applies to all permits except those based on the Uniform Building Code, which has its own expiration provisions.
- B. Permits shall expire two years after the date of issuance if substantial progress has not been made toward realizing the permitted use or project, or within three years if construction has not been completed.
- C. The body charged with granting the permit may extend the date of permit expiration for one year upon request by the applicant prior to said permit's expiration. (Ord. 1505 § 4, 2001).

D. Suspense or Revocation

The Public Works Department may, in writing, suspend or revoke a permit issued 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.

E. Expiration of Plan Review

Much of the work covered under these standards will require multiple permit authority review 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 Department of Community Planning and Development.

F. Approvals and other Permits

There are several other permits or approvals that may be required and referred to in these Standards. Applicants should contact the Planning and Building Departments of Community Planning and Development for a list of other permits and approvals.

In addition, there are several other City approvals (land use) that may have to be obtained prior to the above-listed permits and that may affect the Standards as contained in this document:

- 1. Conditional Use;
- 2. Variance;
- 3. Preliminary Plat;
- 4. Short Plat;

5. Planned Unit Development;
6. Rezone;
7. Critical Areas Permits, and
8. Shoreline Substantial Development Permit.

1.16 FEES

Fees will be as established by the City Council adopting a fee schedule, except where specifically set forth in the *Pacific Municipal Code*. The City Council will further set the dollar penalty for failure to pay said fee or charge in a timely manner. In addition, there are various miscellaneous service and connection fees and charges.

1.17 STAKING

All surveying and staking will be performed by an engineering or surveying firm capable of performing such work. The engineer or surveyor directing such work will be licensed by the State of Washington.

A preconstruction meeting will be held with the City prior to commencing staking.

The minimum staking of streets will be as follows:

- A. Stake centerline alignment every 25 feet (50 feet in tangent sections) with cuts and/or fills to sub-grade.
- 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.
- D. Staking will be maintained throughout construction.

1.18 UTILITY LOCATIONS AND COORDINATION

- A. Excavations in city streets disrupt and interfere with the public use of city streets and damage the pavement. The purpose of this section is to reduce this disruption, interference, and damage by promoting better coordination among utilities making excavations in city streets and between these utilities and the City. Better coordination will assist in minimizing the number of excavations being made wherever feasible and will ensure that excavations in city streets are, to the maximum extent possible, performed before, rather than after, the resurfacing of the streets.
- B. Requirements
 1. Any public or private utility owning, operating, or installing facilities in city streets, alleys, sidewalks, or any other public places that provide water, sewer, gas, electric, communication, video, or other utility service shall prepare and submit to the Public Works Director a utility master plan, in a format specified

by the Director, that shows the location of the utility's existing facilities in city streets, alleys, sidewalks, and other public places, and shows all of the utility's planned major utility work in city streets, alleys, sidewalks, and other public places. Utilities shall submit an initial utility master plan no later than 180 days after the effective date of the ordinance adopting this section. Thereafter, each utility shall submit semi-annually, on the first regular business day of January and July, a revised and updated utility master plan.

Utility master plans shall be submitted in the following format:

- a. One hard copy of the City of Pacific base map at 400 scale (provided by City) showing street location, size, and type of proposed facilities.
- b. A digital copy base map in the City's latest version of AutoCAD, currently AutoCAD 2010 format, showing the above requirements in a layer to be designated by the City. Digital-based maps will be made available by the City. If unable to provide a digital map or have a consulting firm perform the work, the utility can pay city mappers to perform this service.
- c. A hard copy list in a spreadsheet format as designated by the City.
- d. A digital copy list of MS Excel spreadsheet format as designated by the City.

The City will merge all information onto one master map and database (including all City projects) and make hard and digital copies available to any utility upon request.

As used in this subsection, the term "planned major utility work" refers to any and all future excavations planned by the utility when the utility master plan or update is submitted that will affect any city street, alley, sidewalk, or other public place.

2. The Public Works Director shall prepare a two-year repaving plan showing the street resurfacing planned by the City for the next two years. The two-year repaving plan shall be revised on a semi-annual basis. The Director shall make the City's two-year repaving plan available for public inspection. In addition, after determining the street resurfacing work that is proposed for each year, the Director shall send a notice of the proposed work to all utilities that have current utility master plans on file. A utility not having an updated utility master plan on file with the City may have their project permit delayed.
3. The City of Pacific's Six-Year CFP is updated annually and will be made available to utilities upon request.
4. The City and private utilities will notify adjacent property owners approximately six months prior to project construction to inform them of new pavement restoration requirements and encourage installation of new services and/or upgrades.
5. Prior to applying for an excavation permit, any person planning to excavate in the City's streets, alleys, sidewalks, or other public places shall review the

utility master plans and the City's two-year repaving plan on file with the Director and shall coordinate, to the extent practicable, with the utility and street work shown on such plans to minimize damage to and avoid undue disruption and interference with the public use of such streets, alleys, sidewalks, or other public places.

6. Each utility will look for opportunities to combine projects and share trenches. The utilities will provide a reasonable assurance that other utilities have been contacted and given an opportunity to participate in the project.
7. Utilities/developers must show how they plan to serve properties adjacent to their proposed frontage improvements. This is to ensure all properties can be served in the future without cutting into the new street.

Services are typically provided through main or service connection stub-outs past the edge of the pavement.

8. Utilities that plan ahead and construct projects prior to City repaving projects may have their pavement restoration requirements reduced.
 - 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 as shown in typical sections. 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. Deviations of location will be approved by the Public Works Director.
 - b. 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.
 - c. The contractor/developer will be responsible for utility locates in conjunction with their project until final Public Works approval is given.
 - d. All new utilities, other than those located on private property, will be installed underground by the utility owning said facility, as set forth in these standards and the provisions set forth in franchise agreements between the City and the utility.
 - e. Utilities converted from overhead to underground on existing roadways may be located within the right of way.
 - f. A right-of-way obstruction and/or excavation/restoration permit is required of any utility, except City-owned facilities and utilities, who hold a franchise agreement with the City for any work done within the right-of-way and will comply with all provisions as set forth in Section 10 of these standards.

1.19 EASEMENTS

Where public utilities and/or their conveyance systems cross private lands, an easement shall be granted to the City. The Public Works Engineering Department will generally review 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 an attorney or a licensed land surveyor or engineering firm capable of performing such work.

Easement widths will be centered on the utility and be 15 feet for a single utility and 30 feet for dual utilities. Easements for water, sewer, and drainage facilities will be no less than 15 feet wide (generally 7.5 feet either side of the centerline of the facility). Additional width may be required if necessary to accommodate the maintenance of a facility. Construction/slope easements will be required when appropriate with widths as necessary to encompass work area. When trench depths dictate or where pipe diameter or vault widths exceed 4 feet, a wider easement may be required by the Public Works Director.

Easements are required to be submitted in draft, unsigned form for review and approval prior to plan approval. Signed copies are required prior to final approval. Any change in design that places an amenity, i.e., water, sewer, etc., outside of the easement may necessitate stopping of construction until plans and easements can be resubmitted and approved.

Easements will be recorded by the permittee upon satisfactory completion of the work and acceptance by the City Council.

1.20 RECORD DOCUMENTS

Permittees who install systems within, on, or below the City's public rights-of-way or public easements shall furnish the City with accurate drawings, plans and profiles, showing the location and curvature of all underground structures installed, including existing facilities where encountered and abandoned installations. Horizontal locations of utilities are to be referenced to street centerlines, as marked by survey monuments, and shall be accurate to a tolerance of plus or minus one half (1/2) foot. The depth of such structure may be referenced to the elevation of the finished street above said utility, with depths to the nearest one-tenth (1/10) foot being shown at a minimum fifty (50) foot interval along the location of said utility.

Such record drawings shall be submitted to the City within thirty (30) calendar days after completion of the work. Record drawings shall be stamped, signed, and dated by a professional currently licensed in the State of Washington.

In the event that the permittee does not have qualified personnel to furnish the record drawings required by this section, he shall advise the Public Works Director in order that necessary field measurement may be taken during construction for the preparation of record drawings. All costs of such field inspection and measurement, to include the preparation of the record drawings, shall be at the sole expense of the permittee.

As-built drawings shall be submitted on permanent, stable reproducible mylar with a signature and data which verifies the "as-built" condition of the project. All data as shown on the drawings shall be added to the original AutoCAD drawing file. Sticky back (glue) reproductions or "sepia" mylars shall not be considered acceptable. Plans will be clearly marked as record

documents. An electronic or digital copy in an AutoCAD-readable format will be submitted with the Mylar plan set in AutoCAD 2010 format unless otherwise approved by the City.

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LAND USE, ZONING, AND CRITICAL AREA REGULATIONS

2.1 GENERAL

The land use, zoning, and critical area standards discussed in this chapter are intended only as a general discussion of the regulations contained in the *Pacific Municipal Code* (PMC). The regulations contained in PMC shall govern development in the City.

2.2 VARIANCES

A variance from any of the development regulations in Titles 13 through 23 PMC, except those governing administrative procedures or permitted uses in a particular zone, may be granted if satisfying the code requirements causes an undue hardship to the property owner because of site constraints unique to the property.

Variances are Type III permits. A variance may only be granted or denied by the City hearing examiner after a public hearing is held. The hearing examiner will issue a decision based on the variance criteria found in Chapter 16.36 PMC. Variances may not be administratively appealed. Judicial review of variances is available pursuant to RCW 36.70C.040.

In cases where there are very minor administrative changes necessary to these standards and in cases where approved manufacturers of materials (such as luminaire poles) have changed, such amendments can be administratively accomplished by City staff. Such minor revisions must carry out the intent of the *Pacific Development Standards (PDS)* and can only be used in cases where technology has evolved beyond the current edition of the *PDS*.

For further information regarding variance procedures, please refer to Chapter 16.24 PMC and Chapter 16.36 PMC.

2.3 CONDITIONAL USE PERMITS

A land use is designated a conditional use because of special requirements due to the nature of the land use, infrequent occurrence, detrimental impacts on surrounding properties, or possible safety hazards. Conditional uses are identified in each zoning designation in Title 20 of the PMC.

Conditional uses are Type IV permits. After a public hearing and decision by the City hearing examiner, certain specified land uses, because of special considerations and conditions, are permitted if the application met the criteria for a conditional use permit (CUP). The decision may not be administratively appealed. Judicial review of CUPs is available pursuant to RCW 36.70C.040.

For further information on CUPs, please refer to Chapter 16.26 PMC and Chapter 20.20 PMC.

2.4 PRELIMINARY PLATS

Preliminary plats allow for the division of property into five or more lots.

Preliminary plats are Type V permits. The City hearing examiner makes a recommendation consistent with the preliminary plat criteria after conducting a public hearing on the preliminary plat application. The City Council then makes the final decision on the preliminary plat application. Decisions on Type V permits may not be administratively appealed. Judicial review is available pursuant to RCW 36.70C.040.

For more information regarding preliminary plats, please refer to Chapter 16.28 PMC and Chapter 19.08 PMC.

2.5 SHORT PLATS

Short plats allow for the division of property into four or few lots.

Short Plats are Type I permits. The City's community development director coordinates review of the proposed short plat and makes an administrative decision on the proposed short plat.

For more information regarding short plats, please refer to Chapter 16.24 PMC and Chapter 19.08 PMC.

2.6 PLANNED UNIT DEVELOPMENTS

Planned unit development (PUD) approvals allow a property owner flexibility in design and zoning requirements on properties of a suitable size in exchange for the overall project resulting in a more efficient and desirable use of land.

PUDs are Type V permits. The City hearing examiner makes a recommendation consistent with the PUD criteria after conducting a public hearing on the PUD application. The City Council then makes the final decision on the PUD application. Decisions on Type V permits may not be administratively appealed. Judicial review is available pursuant to RCW 36.70C.040.

For more information regarding PUDs, please refer to Chapter 16.28 PMC and Chapter 20.69 PMC.

2.7 DETERMINATION OF APPLICATION COMPLETENESS

Once an applicant files a development permit application, the City will notify the applicant in writing within twenty days as to whether the application is complete or incomplete. This process applies to Type I through Type V permits.

Included within the written determination identifying the application as incomplete will be a statement identifying the deficiencies and what is necessary to make the application complete. Once the applicant supplements the earlier submittal with additional information, in all cases within fourteen days thereafter, the City will provide the applicant with another written determination of completeness or, if incomplete, with information about what additional information is necessary to make the application complete.

The City will also notify the applicant as a part of the written notification of completeness what other agencies of local, state, or federal governments that may have jurisdiction over some aspect of the application.

It should be noted that the determination of completeness does not preclude the City from requesting additional information or studies of the applicant after the determination is issued if new information is required or if substantial changes in the proposed action occurs.

2.8 ENVIRONMENTAL POLICY

The City administers the Washington State Environmental Policy Act (SEPA) through Chapter 16.16 PMC. Applicants for new developments, which are determined to be non-exempt, must complete a "SEPA Checklist" early on in the permit process.

Exempt activities, which do not require review under SEPA, include:

- Residential structures of four (4) dwelling units or less;
- Construction of an office, school, commercial, recreational, service or storage building with 12,000 square feet of gross floor area, and with associated parking facilities designed for 40 automobiles;
- Construction of a parking lot designed for 40 automobiles; and
- Any landfill or excavation of 400 cubic yards or less throughout the total lifetime of the fill or excavation.

The SEPA checklist is used by the City to determine if the proposed development has the potential for causing probable adverse impacts on the environment. After review of the checklist and any required supporting documentation, the City will issue one of three SEPA threshold determinations:

- A. A Determination of Non-Significance (DNS)
- B. A Determination of Mitigated Non-Significance (MDNS)
- C. A Determination of Significance (DS)

If the project has been determined to be significant (DS), then the project applicant must prepare an Environmental Impact Statement (EIS) under supervision of the City. The EIS can conclude that the development can be approved with mitigations to reduce adverse impacts, or deny the project if adverse impacts cannot be mitigated. If a project has been determined not to be significant, the applicant can immediately proceed to formal site plan approval and issuance of permits.

For a complete list and detailed description of SEPA exempt activities, please refer to 197-11-800 WAC.

For a detailed review of the process for submitting a SEPA checklist, the SEPA threshold determination process, and EIS review process, please refer to Parts Three and Four of 197-11 WAC and Chapter 16.16 PMC.

2.9 CRITICAL AREAS PERMITS

The City's Critical Area Ordinance has the following purposes:

- A. Protecting the functions and values of ecologically sensitive areas while allowing for reasonable use of private property through the application of the best available science;
- B. Implementing the Growth Management Act and the natural environment goals of the comprehensive plan; and
- C. Protecting the public from injury and loss due to slope failures, erosion, seismic events, volcanic eruptions, or flooding

2.9.1 Wetlands Protection

As part of the development application process, applicants will need to work with the City in determining if wetlands are on the site.

The presence of wetlands on the site for development requires that a wetland biologist mark the wetland boundary. Wetland buffers from the wetland boundary are required in order to protect the wetland.

Under certain circumstances, adverse impacts to the wetland and/or wetland buffer are possible with appropriate mitigation measures. Mitigation measures include restoring a previously degraded wetland, enhancing an existing wetland, or creating a new wetland to offset the amount of wetland degraded by development.

For more information on wetlands protection, please refer to Chapter 23.20 PMC.

2.9.2 Critical Aquifer Recharge Protection

In order to protect the underground aquifer, which is the primary source of drinking water for the City, certain land use restrictions have been put in place to protect this vital resource.

For more information on aquifer recharge protection, please refer to Chapter 23.30 PMC.

2.9.3 Flood Control Areas

To protect life and property from loss due to flooding, the City has established methods and provisions for addressing development within flood ways and flood plans.

For further information on building on flood control areas, refer to Chapter 23.40 PMC.

2.9.4 Geologically Hazardous Areas

The City has designated as geologically hazardous those areas susceptible to erosion hazards, landslides, seismic hazards, and other hazard areas at risk to mass wasting, debris flows, rock falls, and differential settlement.

For further information on building on geologically hazardous areas, refer to Chapter 23.50 PMC.

2.9.5 Habitat Conservation Protection

Certain development sites may have additional constraints because federally listed endangered, threatened, or sensitive species are known to frequent the site. Such areas are noted in Chapter 23.50 PMC.

If a protected habitat is determined to be present on a site, the development applicant will be required to submit a habitat protection plan to protect the habitat and permit reasonable development of the site using buffers and other mitigation measures.

For further information on habitat conservation areas, refer to Chapter 23.50 PMC.

2.10 PROTECTION OF SIGNIFICANT TREES

The City has established provisions for the protection of significant trees.

For further information on the protection of significant trees, refer to Chapter 20.70 PMC.

2.11 SHORELINE SUBSTANTIAL DEVELOPMENT PERMIT

The City requires new development not exempt from the Shoreline Management Act and Chapter 21.12 PMC to obtain a Shoreline Substantial Development Permit prior to the beginning of construction. In the City, development within 200 feet of the White River is subject to shoreline management control.

Shoreline permits are Type IV permits. For a complete listing and full description of developments exempt from shoreline permits, refer to 173-27-040 WAC.

For further information on development within the shoreline area, refer to Chapter 21.12 PMC.

2.12 REZONES

A property owner can request a change in a site-specific zoning designation, or rezone. For example, a property could be rezoned from a residential use to commercial use if the application met the criteria for a rezone.

The City hearings examiner makes decisions on individual rezones as a Type V permit after holding a public hearing and weighing the request against the rezone criteria. The decision of the Hearings Examiner may be appealed to the City Council.

For more information on individual rezones, please refer to Chapter 16.28 PMC.

Area-wide rezones are not quasi-judicial and are processed as legislative actions. For more information, please refer to Chapter 16.32 PMC.

2.13 ANNEXATION

Property owners have the option to request annexation to the City in order to gain municipal services such as water and sewer. In many cases, such services are necessary in order to permit more dense developments. The City will not extend utilities to property that could successfully be annexed unless the annexation is complete.

Owners of properties lying outside of the City must legally commit their property to eventual annexation prior to being served by the City's utility system and may be required to enter into a utility extension contract agreement.

These annexation requirements will be applied to all extensions of the City's utility to areas outside the City limits. Anyone who desires to extend the City's utility system should contact the Department of Community Planning and Development for specific annexation requirements.

For more information on the annexation process, please refer to Title 14 PMC and Chapter 16.28 PMC or contact the City.

2.14 ZONING TEXT AMENDMENTS

The Planning Commission, City Council, or staff can initiate changes in the text of the Zoning Code. Anyone is welcome to request the Planning Commission, City Council, or staff to begin the zoning text amendment process

For more information on zoning text amendments, please refer to Chapter 16.32 PMC.

2.15 COMPREHENSIVE PLAN AMENDMENTS

The Planning Commission, City Council, or staff can initiate an amendment to the comprehensive plan. Anyone can request an amendment to the comprehensive plan utilizing a form provided by the director of community development. Such amendments are due December 31 each year. Amendments are not considered more than once a year.

For more information on comprehensive plan amendments, please refer to Chapter 16.32 PMC.

EROSION AND SEDIMENT CONTROL

3.1 GENERAL

The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of erosion control facilities. Greater or lesser requirements may be mandated by the City due to localized conditions. Erosion and Sediment Control revisions, additions, modification, or changes shall be made in compliance with City standards, ordinances, and Best Management Practices as identified by the *King County Surface Water Design Manual* (KCSWDM). The KCSWDM is approved by the City of Pacific for erosion and sediment control.

If warranted based on the condition and capacity of the existing storm drainage infrastructure (or lack thereof) and, impacts caused by the proposed development, off-site improvements may be required, at the City Engineer's discretion, to mitigate impacts caused by the proposed development.

3.2 DESIGN STANDARDS

Except as supplemented by these standards, the Erosion and Sediment Control system(s) shall be designed and installed in accordance with the latest edition of the following documents (including all amendments and revisions thereto):

- *Standard Specifications for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the "WSDOT/APWA Standard Specifications").
- *Standard Plans for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the "WSDOT/APWA Standard Plans").
- The *Surface Water Design Manual* as published by King County Department of Natural Resources (referred to as the "Surface Water Design Manual" or the "KCSWDM").
- *Stormwater Management Manual for Western Washington (SMMWW)* as published by the Washington State Department of Ecology.

Erosion Control facility workmanship and materials will be in accordance with the *Pacific Development Standards*, the most current copy of the WSDOT/APWA Standard Specifications, the KCSWDM, the SMMWW, and according to the recommendations of the manufacturer of the materials.

A copy of all computations and other data used for design of the erosion control facilities shall be submitted with the plans to the City for approval.

3.2.1 Project Plans and Reports

Projects that disturb 1 acre or more of land or that require drainage review per the KCSWDM must prepare a Construction Stormwater Pollution Prevention Plan (SWPPP). Each of the twelve elements must be considered and included in the Construction SWPPP

unless site conditions render the element unnecessary, and the exemption from that element is clearly justified in the narrative of the SWPPP.

Projects that disturb less than 1 acre of land or are not subject to drainage review per the KCSWDM are not required to prepare a Construction SWPPP, but must complete a SWPPP Short Form. A SWPPP Short Form is attached as Appendix B.

Construction site stormwater runoff is regulated on the local level and at the state level. Construction projects must apply to WSDOE for coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Associated with Construction Activities if:

- The project results in the disturbance of 1 acre or more of land area, including clearing, grading, and excavation activities; and
- The project discharges stormwater from the site into a surface water or discharges to a storm drain system that discharges to a surface water.

Refer to the KCSWDM and SMMWW for further SWPPP and NPDES information.

All developed sites will have erosion and sediment control plans conforming to the requirements of the KCSWDM, including best management practices (BMPs). Detailed plans shall be submitted for the City's review, which provide the locations, size, and type of the proposed erosion control measures. Project plans shall contain the following:

- A. A horizontal scale of not more than 1 inch = 50 feet and a vertical of not more than 1 inch = 10 feet.
- B. A north arrow and scale bar.
- C. Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); contours extending at least 50 feet beyond property lines; existing utility pipes with size and material; and appurtenances.
- D. Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines.
 - Pipe - location(s), diameter, length, material, slope, and relevant Detail reference(s)
 - Structure(s) – structure number, location(s), type and/or size, top elevation, invert elevations, necessary appurtenances, and relevant Detail reference(s)
 - Other appurtenances with relevant Details reference(s)
- E. The storm water system point of discharge to public or off-site system.
- F. Silt fence to control sediment laden storm water from exiting the construction site.
- G. Sediment traps to contain sediment in controlled site run-off.
- H. Stabilized construction entrance to reduce sediment from being tracked off the construction site.
- I. A copy of the City Standard Erosion and Sediment Control Notes shall be included on all plans.

EROSION AND SEDIMENT CONTROL NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. A Certified Erosion and Sediment Control Supervisor is required. The ESC Supervisor must have attended and Erosion and Sediment Control class within past 3- years. Provide a copy of certification card.
4. The Certified Erosion and Sediment Control Supervisor will oversee and be responsible for all erosion control. The facilities shall be inspected daily and maintained to ensure proper functioning. Written records shall be kept of weekly reviews and after every significant storm event of the ESC facilities during the wet season (October 1 to April 30). Monthly reviews during the dry season (May 1 to September 30). Written records shall be provided to the Project Manager or Inspector upon request.
5. Provide a sign displaying a 24-hour contact number and name of the ESC Supervisor. The letter size shall be a minimum of 2-inch letters. This shall be in place prior to construction start.
6. In case erosion or sedimentation occurs to adjacent property, all construction work on the project that will aggravate the situation will cease and the contractor shall immediately commence restoration or mitigation measures. Restoration activity shall continue until such time as the problem is rectified.
7. Stabilized construction entrances and roads shall be installed at the beginning of construction and maintained during the duration of the project. Additional measures may be required such as wash pads to ensure that all paved areas are kept clean. No mud is allowed to enter onto City streets.
8. All necessary facilities shall be maintained on-site to prevent debris, and mud from accumulating on the public right-of-way.
9. In any area which has been stripped of vegetation and where no further work is anticipated for a period of 2-7 days or more, all disturbed areas must be immediately stabilized with mulching, grass planting, or other approved erosion control treatment applicable to the time of year in question. Grass seeding alone will be acceptable only during the months of April through September, inclusive. Seeding may proceed, however, whenever it is in the interest of the contractor, but must be augmented with mulching, netting, or other treatment.
10. All stock piled material (bedding, trench excavation, trench backfill) subject to erosion shall be covered with 0.06 mil plastic sheeting secured in place with sandbags or equivalent.
11. The storm drain system and existing ditches shall be cleaned daily (Section 7-07.3). All drainage systems shall be cleaned to the acceptance of the City of Pacific prior to acceptance of the project.

12. Two (2) weeks prior to the beginning of the wet season (October 1), all disturbed areas shall be reviewed to identify which ones can be seeded in preparation for the winter rains. Disturbed areas shall be seeded within one (1) week of the beginning of the wet season. A sketch map of those areas to be seeded and those areas to remain uncovered shall be submitted to the Project Manager. The Project Manager can require seeding in additional areas in order to protect surface waters, adjacent properties, or drainage facilities.
13. Penalties for an Erosion Control violation are subject to a \$250 fine under Chapter 24.08.360 – Civil Penalty. Each day is considered a different violation.

A. Erosion and Sediment Control

All developed sites will have an erosion and sediment control plan conforming to the requirements of the KCSWDM and WSDOE, including best management practices (BMPs). At a minimum, the following will be addressed:

1. Mark Clearing Limits (orange construction fence, staking with ribbon)
2. Establish Construction Access (gravel entrance, tire wash area)
3. Control Flow Rates (using pipe, drainage swales, berms)
4. Install Sediment Controls (silt fence, sediment traps)
5. Stabilize Soils (mulch, hydroseed, straw)
6. Protect Slopes (divert water from top of slope, cover with plastic or erosion control blanket)
7. Protect Drain Inlets (catch basin inserts)
8. Stabilize Channels and Outlets (cover with grass, riprap)
9. Control Pollutants (maintain equipment to prevent leaks)
10. Control Dewatering (pump to sediment trap)
11. Maintain BMPs (weekly maintenance/replacement, preparation for storm events)
12. Manage the Project (establish construction schedule, phasing, contact numbers)
13. A copy of the City Standard Erosion and Sediment Control Notes shall be included on all plans.

3.3 MATERIALS AND METHODS

3.3.1 General

Erosion Control workmanship and materials will be in accordance with the *Pacific Development Standards*, the most current copy of the WSDOT/APWA Standard Specifications, the KCSWDM, and according to the recommendations of the manufacturer of the materials.

3.3.2 Materials

Erosion Control systems materials shall meet the requirements of WSDOT/APWA Standard Specifications:

| | |
|---|----------------|
| Erosion Control and Water Pollution Control | Section 8-01.2 |
| Chain Link Fence and Wire Fence..... | Section 8-12.2 |
| Riprap..... | Section 8-15.2 |

3.3.3 Construction Requirements

Erosion Control systems shall be constructed per WSDOT/APWA Standard Specifications:

| | |
|---|----------------|
| Structure Excavation | Section 2-09.3 |
| Cleaning Existing Drainage Structures | Section 7-07.3 |
| Erosion Control and Water Pollution Control | Section 8-01.3 |
| Chain Link Fence and Wire Fence..... | Section 8-12.3 |
| Riprap..... | Section 8-15.3 |

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LIST OF STANDARD DETAILS
CHAPTER 3 – EROSION AND SEDIMENT CONTROL

| | |
|------------------------------------|----------------|
| Construction Entrance Pad | See the KCSWDM |
| Silt Fence | EC-Slt Fnc |
| Straw Bale Dam | EC-Strw Bale |
| Catch Basin Inlet Protection | EC-CB Prot |

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TRANSPORTATION

4.1 GENERAL

The intent of this chapter is to encourage the uniform development of an integrated, fully accessible public transportation system that will facilitate present and future travel demand with minimal environmental impact to the community as a whole. The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of transportation facilities. Greater or lesser requirements may be mandated by the City due to localized conditions. Transportation revisions, additions, modification, or changes shall be made in compliance with City standards, and ordinances.

Streets and alleys will be designed and constructed in conformance with the provisions of the *Pacific Development Standards* Chapter 4, the minimum requirements established by the current editions of the American Association of State Highway and Transportation Officials (AASHTO) and the Institute of Transportation Engineers (ITE) standards, and as identified in Chapter 4. Alignment of major arterials, minor arterials, and collectors will conform as nearly as possible with that shown in the Comprehensive Plan.

4.1.1 Alignment and Location.

Proposed streets and other primary accesses will be aligned with existing streets or accesses as identified in the Transportation Element of the Pacific Comprehensive Plan or as directed by the Public Works Department. Street alignments will relate where practical to natural topography and will be selected so as to minimize grading and avoid excessive runoff.

Alignment and connections of newly constructed public streets will be provided in accordance with the following conditions in Chapter 4, unless otherwise prohibited:

- A. Street connection will be provided to any existing public street or right-of-way “stub” abutting the proposed development.
- B. Pedestrian and emergency access will be provided to any abutting public school, public building, urban trail, or transit stops.
- C. Streets will be located for the development of adjoining land.
- D. Provisions, such as stub roads, will be made for connection to any adjacent undeveloped, contiguous land area of one acre or more.
- E. Where physically possible, more than one connection to the existing public street system will be provided for any development, or part thereof, of four acres or more (excluding critical areas and associated buffers).

4.1.2 Rights-of-Way and Easements

The developer will dedicate right-of-way and grant easements as required to comply with Chapter 4 of the *Pacific Development Standards* and install all necessary improvements in conformance with the standards prescribed.

4.1.3 Street Side Improvement

- A. All commercial and residential (including multi-family) development, plats, and short plats will install street improvements at the time of construction as required by the Department of Community Planning and Development. Such improvements may include curb and gutter; sidewalk; transit stops, pads, and shelters; street storm drainage; street lighting system; traffic signal modification, relocation, or installation; street trees; utility relocation or installation; undergrounding of franchised utilities; landscaping and irrigation; and street widening, all pursuant to these Standards. Plans will be prepared and signed by a licensed civil engineer registered in the State of Washington.
- B. At a minimum, all street side improvements will be made across the full frontage of the property being developed from centerline to right-of-way line. A transition taper will be included at both ends of the project, if required.
- C. When street improvements are required on existing developed streets:
 - 1. Half-street pavement reconstruction will be required when the existing pavement rating is at or below 40, based on the **City of Pacific Pavement Management System**; crown slope is less than 1.0 percent or greater than 3 percent; or is light bituminous pavement. Section pavement coring and/or subsurface investigation will be required to determine base condition.
 - 2. Half-street asphalt overlay (2-inch minimum) will be required when the existing pavement rating is at or below 60 based on the **City of Pacific Pavement Management System**. Pre-leveling may be required to create a uniform 2 percent crown slope.
- D. The acceptance of private streets as public streets will be considered only if the streets meet all applicable public street standards, including right-of-way widths.
- E. Deferrals
 - 1. In certain circumstances, it may not be appropriate to require installation of street side improvements at the time a development occurs. In such situations, the City Council is authorized to permit deferral of installation of such improvements to a later date.
 - 2. The City Council may authorize a deferral of any or all required street side improvements as defined by these Standards, provided one or more of the following criteria 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 street side improvements required for the development would create or intensify a hazard to public safety.

- c. The installation of required street side improvements would be inconsistent with the City's long-range street, storm drainage, sewer, or water plans.
 - d. The installation of street side improvements required for the development could be more safely, efficiently, and effectively implemented if done concurrently with the installation of improvements required for other developments along the same street.
 - e. The scope of the development being authorized by the permit does not constitute a significant change in the existing demands of the use of property upon the City's transportation and utility transmission systems.
3. Security for Deferral. Any deferred street side improvement will be secured for installation at a later date by one of the following methods selected by the Public Works Director.
- a. Waiver of Protest to Participate in a (Utility) Local Improvement District (LID). The property owner will execute and record a covenant document that ensures the participation of the subject property owner(s) in any Local Improvement District formed for the construction of such street side improvements. Said document will be in a form acceptable to the City Attorney and will be effective for a period of 10 years from the date of recording.
 - b. Payment in Lieu of Installation. The property owner will pay to the City an amount equal to the estimated value of the required street side improvements as determined by the Public Works Director. Such amount will be deposited into a municipal fund account reserved for the financing of such improvement. Such payment will be refunded in full, plus interest, to the successor in interest in the property should the City not commence the project to install the required street side improvements or if the funds are not otherwise encumbered within five (5) years from the date such payment is made (RCW 82.02.020).

F. Exemptions

- 1. Any addition to and/or remodeling of a single-family residence or duplex.
- 2. New individual single-family development, provided, however, that when sidewalks are otherwise not currently in place. Either sidewalks and/or pedestrian walkways or paths will be installed or an in lieu of payment to the City sidewalk fund will be made.

4.2 DESIGN STANDARDS

Except as supplemented by these standards, the Transportation system(s) shall be designed and installed in accordance with the latest edition of the following documents (including all amendments and revisions thereto):

- *Standard Specifications for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Specifications”).
- *Standard Plans for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Plans”).
- *WSDOT Design Manual*.
- *WSDOT Hydraulic Manual*.
- *WSDOT Traffic Manual*.
- *WSDOT Construction Manual*.
- *U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD)*, as amended and approved by Washington State Department of Transportation.
- *Americans with Disabilities Act Accessibility Guidelines (ADAAG)*

The design of streets and roads will depend upon their type and usage.

The layout of streets will provide for the continuation of existing streets in adjoining subdivisions or of their proper projection when adjoining property is not subdivided.

4.2.1 Project Plans

Detailed plans shall be submitted for the CITY'S review which provide the locations, size, and type of the proposed transportation system improvements. Project plans shall contain the following:

- A. A vicinity map.
- B. A horizontal scale of not more than 1 inch = 50 feet. A vertical scale of not more than 1 inch = 10 feet.
- C. A north arrow and scale bar.
- D. Horizontal data, including:
 - limits of right-of-way
 - centerline with bearing
 - stationing
 - monumentation at: intersections, cul-de-sacs, PTs, PCs, and PRCs
 - alignment
 - horizontal curve data: PC, PT, and or PRC

- pavement widths
 - cul-de-sac widths
- E. Vertical data, including:
- stationing
 - existing and proposed centerline profile with elevations at 50-foot intervals minimum
 - gutter line profile with elevations at 50-foot intervals minimum and slopes
 - longitudinal slopes expressed as a percent
 - vertical curve data required when slope change exceeds 1.0 percent: PC, PT, PI, high point, low point, 50-foot minimum length, elevations at 25-foot intervals
- F. Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); existing utility pipes with size and material; and appurtenances.
- G. Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines, including:
- Curb and Gutter
 - Driveways
 - Sidewalks, including length and width
 - Wheelchair ramps
 - Signage
 - Mailboxes
- H. Road section details include 3 percent minimum cross slope.
- I. A copy of the City Standard Street Construction Notes shall be included.

STREET CONSTRUCTION NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. All transportation system improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, engineer, and appropriate public agencies.
4. All curbs, street grades, sidewalk grades, and any other vertical and/or horizontal alignment will be staked by engineering or surveying firms capable of performing such work.

5. 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 WSDOT/APWA Standard Specifications. The new asphalt will be feathered back over existing asphalt to provide for a seal at the saw cut location and the joint sealed with Grade AR-4000W paving asphalt.
6. Compaction of sub-grade, rock, and asphalt will be in accordance with the WSDOT/APWA Standard Specifications.
7. All joint (contraction, construction, isolation, etc.) layout plans shall be approved one week before pouring concrete.
8. Form and sub-grade inspection by the City is required before pouring concrete. Twenty-four hours' notice is required for form inspection.
9. Testing and sampling frequencies will be as described in the Standards.
10. All asphalt to be removed must be saw cut. A jackhammer can be used if a nice even cut is made. Wheel cutting is not an approved method unless approved by the City of Pacific Engineer in advance. Any deviation from this specification shall be in writing 48-hours before saw cutting takes place.
11. Additional asphalt may be required for removal by the City of Pacific Engineer or Inspector.
12. All vertical drop-offs within the traveled way will be backfilled each night.
13. Abutting edges and curbs must be thoroughly cleaned
14. All asphalt edging will be tacked prior to asphaltting.
15. All asphalt patches must be a smooth transition. No bumps or high/low spots (Section 5-04.3(13)). Surface smoothness maximum variation in 10 feet parallel to the centerline is 1/8 inch and transverse 1/4 inch.
16. Sub grade will be compacted and tested prior to asphaltting.
17. A minimum of 3-inch Class ½-inch asphalt patch to be compacted to 92 percent max rice density (Section 5-04.3(10)B).
18. All final joints and saw cuts to be sealed (Section 5-05.3(8)B) using a hot poured joint sealant (Section 9-04.2(1). A preferred sealant is AR-4000.
19. On major streets where traffic congestion is a problem, the patch will be protected with a ¼ inch steel plate until sufficiently cooled.
20. Call for a forms inspection before placing of concrete. Call (253) 929-1110 to schedule.

21. No monolithic pours allowed. The sidewalk, curb & gutter, driveways, driveway aprons, wheelchair ramps, etc. are to be individual pours and separated by a fabric expansion joint.
22. Protecting the concrete is the responsibility of the contractor. No graffiti, footprints, finishing blemishes, or other objectionable marks allowed. If any of this takes place, the section that is damaged will be replaced.
23. Concrete shall be a 5.5 sack mix with a 28-day strength of 3000 psi. Any deviation from this specification shall be in writing 48-hours before concrete is placed.
24. During the first 14-days of curing, the contractor must protect from freezing.
25. Curb/Gutter and sidewalk construction shall follow a true and uniform horizontal and vertical alignment.
26. The vertical and horizontal surfaces shall be a smooth broom finish with no detectable finishing blemishes, undulations, ripples, swells, waves, ruts, furrows, graffiti, or other objectionable marks. The end result shall be a neat and professionally finished appearance.
27. The edge finish adjacent to the expansion joint material shall be clean and free of excess slurry. The expansion joint material shall be trimmed to a level even with the adjacent concrete resulting in a neat and professionally finished appearance.
28. The City Engineer, in his sole discretion reserves the authority to order the removal of sections of curb/gutter and sidewalk that do not meet the workmanship and aesthetic standards of the City of Pacific.
29. Sections of newly constructed curb/gutter and sidewalk, that exhibit cracking following curing, shall be subject to removal and replacement.
 - i. Cracking resulting from sub-base failure or construction site damage shall be immediately removed and replaced to the nearest expansion joint.
 - ii. Minor hair line stress cracks may, at the discretion of the Project Manager, be monitored and re-evaluated for possible removal at the end of the maintenance period.

4.2.2 Streets and Roads

City streets are divided into major arterial, minor arterial, collector, local access, minor access, and half streets in accordance with regional transportation needs and the functional use each serves. Areas of the city zoned for commercial land use will use major arterial or minor arterial street standards for new street development.

Street improvements that are a continuation of existing street widths, sidewalks, curb lines, and street light improvements that were properly installed in accordance with

previous City standards and permits may be developed to the existing improvement standard, if approved by the Public Works Director.

Generally speaking, the functional classification of streets is defined as follows:

- **MAJOR ARTERIAL** – An arterial street provides an efficient, direct route for long-distance travel within the region and different parts of the City. Street-connecting freeway interchanges to commercial concentrations are classified as arterials. Traffic on arterials is given preference at intersections, and some access control may be considered in order to maintain capacity to carry high volumes of traffic.
- **MINOR ARTERIAL** – A street that provides connections between the major arterial and concentrations of residential and commercial land uses. The amount of through traffic is less than a major arterial, and there is more service to abutting land uses. Traffic flow is given preference to lesser streets.
- **COLLECTOR** – A street that distributes and collects traffic within a neighborhood and provides a connection to a major or minor arterial. Neighborhood collectors serve local traffic, provide access to abutting land uses, and do not carry through traffic. Their design is compatible with residential and commercial neighborhood centers. Collectors are defined as streets currently serving or anticipated to serve more than sixty four (64) dwelling units (or equivalent) or connecting to an arterial.
- **LOCAL ACCESS** – A street that provides access to abutting land uses and serves to carry local traffic to a collector. Local access streets currently serving or anticipated to serve in the future up to sixteen (16) dwelling units (or equivalent).
- **HALF STREET** – A street constructed along an edge of a development utilizing at least half the regular width of the right-of-way and permitted as an interim facility pending construction of the other half of the street by the adjacent owner. The construction of half streets will be permitted only along the boundaries of a development. Pavement shall be at least 20 feet in width or as required for that street classification (measured from gutter line) will be provided and an adequate right-of-way width will be dedicated. “No Parking” signs will be installed as required to ensure fire access. Signs are to be spaced on 50-foot staggered spacing or 100 feet for one side spacing or as required by the Valley Regional Fire Authority.
- **ALLEY** – An alley is defined as a strip of land dedicated for public use which is less than 20 feet in width between property lines and which is intended to provide driveway access to adjacent properties.

Alleys may be permitted at the rear of single-family residential, multi-family residential, commercial, or industrial property. Dead-end alleys are prohibited. Alleys not required for fire suppression access, solid waste collection, or other public purposes may be privately owned. Unless City Council approves an exemption, private alleys will conform to all

improvement standards for public alleys, will be posted, and will meet all other provisions applicable to private streets.

- **CUL-DE-SAC** – A street with a single common ingress and egress and with a circular turnaround at the end. A turning area with a curb line radius, as specified, will be provided at the end of all dead-end streets and cul-de-sacs. Alternative designs for turning areas will be permitted in accordance with the Standard Plans. Where a street dead-ends, a barricade constructed in accordance with the specifications of the City will be installed. When cul-de-sacs are constructed, maximum length will be limited to 300 feet.

A. Right-of-Way

1. Right-of-way is determined by the functional classification of a street. See Minimum Street Design Standards in Table 4.1.
2. Right-of-way requirements may be increased if additional lanes, pockets, transit lanes, bus loading zones, operational speed, bike lanes, utilities, schools, or other factors are required as determined by the Public Works Director.
3. Right-of-way will be conveyed to the City on a recorded plat or by a right-of-way dedication or separate instrument.

Table 4.1: Minimum Design Standards

| Design Standard | Major Arterial | Minor Arterial | Collector | Local Access | Half Street |
|---|--|--|---|---|---|
| Minimum Right-of Way | 60' to 100' with 10' easements on both sides) for future widening on 60' widths | 60' to 100' with 10' easements on both sides) for future widening on 60' widths | 50' with 5' easements on both sides) for future development | 50' with 5' easements on both sides) for future development | 32' |
| Minimum Pavement Width | 48' | 40' | 36' | 32' | 24' |
| Parking Lane | None | Both Sides | Both Sides | One Side | None |
| Minimum/ Maximum Grade | 0.7% - 8% | 0.7% - 8% | 0.7% - 10% | 0.7% - 10% | 0.7% - 10% |
| Curb | Cement Concrete Curb and Gutter Both Sides | Cement Concrete Curb and Gutter Both Sides | Cement Concrete Curb and Gutter Both Sides | Cement Concrete Curb and Gutter Both Sides | Cement Concrete Curb and Gutter One Sides |
| Sidewalks | Both Sides: 5' Wide (Commercial areas may require up to 10' widths at discretion of Planning Commission | Both Sides: 5' Wide (Commercial areas may require up to 10' widths at discretion of Planning Commission | Both Sides: 5' Wide | Both Sides: 5' Wide | One Side: 5' Wide |
| Cul-de-Sac Radius (pavement width) | N/A | N/A | N/A | 96' Paved Radius | N/A |
| Intersection Curb Radius | 30' | 30' | 30' | 30' | 25' |
| Design Speed (MPH) | Per City Discretion | 25 | 25 | 25 | 15 |
| Minimum Centerline Radius | 460' | 460' | 460' | 200' | As Approved |
| Stopping Distance | 250' | 250' | 250' | 160' | As Approved |

B. Pavement Width

The pavement and right-of-way width depend upon the street classification. The Minimum Street Design Standards shows the minimum widths allowed, as shown in Table 4.1. Street widths will be measured from face of curb to face of curb.

Radius requirements at cul-de-sac "bulb." Right-of-way at "bulb" will be increased as required by the Department of Public Works or Valley Regional Fire Authority.

C. Pavement Cross-Section

The pavement cross-section shall be designed by a geo-technical engineer licensed in the State of Washington. A geo-technical engineering report shall be submitted with the plans including the recommendation for pavement designed based on field soil evaluation.

D. Parking Lanes

The parking lane requirements depend upon the street classification, as shown in Table 4.1.

E. Grades

Street grades shall conform closely to the natural contour of the land. In some cases, a different grade may be required by the Public Works Director. The minimum allowable grade will be 0.7 percent, unless otherwise improved in writing by the City Engineer. The maximum allowable grade will be 8 to 15 percent or as allowed by Valley Regional Fire Authority, depending upon the street classification, see Table 4.1.

F. Curb and Gutter

Plans for the construction of curb and gutter are to be submitted as part of the street plans when applicable.

Cement concrete curb will be used for all street edges unless otherwise approved by the Public Works Director. All curbs will be constructed of commercial concrete as shown on Detail *ST-C&G*.

Curb and gutter shall be installed on all public streets. Rolled concrete curb shall not be permitted unless requested and approved in writing by the City Engineer.

G. Sidewalks

1. Sidewalks will be constructed within all new developments and on the development sides of any streets abutting the exterior of all developments. Where a pathway or trail plan is incorporated in a development plan, the City may waive the requirement for sidewalks across the frontage of each individual lot.
2. All sidewalks must be constructed to provide for access ramps in accordance with the standards of state law. Curb access ramps will be installed pursuant to one of the Standard Plans.

3. Sidewalks will be constructed of commercial concrete 4 inches thick. When the sidewalk and curb are contiguous, the width of the sidewalk will be measured from face of curb to back of sidewalk.
4. Sidewalks and curbs will be required on both sides of all streets interior to a plat development. Sidewalks and curbs will also be required on the development side of streets abutting the exterior of all development.
5. The width of sidewalks will be as shown in Table 4.1.
6. Monolithic pour of curb and sidewalk will not be allowed.
7. Repair, maintenance, and upkeep of the sidewalk and all street side features, including landscaped areas and trees, are the responsibility of the abutting property owner.

H. Planting Strips

Planting strips will be constructed within all new developments and on the development sides of any streets abutting the exterior of all developments.

I. Centerline Radius

Horizontal or vertical street curves, sight distance, grades, and tangents will be based on the current edition of American Association of State Highway and Transportation Officials (AASHTO) standards. A design proposal that differs from the AASHTO standard may be approved by the Public Works Director, without a variance, if the deviation is justified to minimize grading, avoid excessive run-off or topographic conditions attending the development site, or to implement traffic calming techniques when warranted.

J. Site Obstructions

Sight distance shall be 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 measured from a height of eye at 3.50 feet on the minor road to height of object 4.25 feet on the major road.

The vertical clearance area within the sight distance triangle will be free from obstructions to a motor vehicle operator's view between a height of 2.5 feet and 10 feet above the existing surface of the street.

Sight obstructions that may be excluded from these requirements include 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 at all seasons a clear and unobstructed cross view, buildings constructed in conformance with the provisions of appropriate zoning regulations and pre-existing buildings.

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.

K. Pavement Markings and Signing

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 uniformity. Street signs and pavement markings shall comply with the latest edition of the *U.S. Department of Transportation Manual on Uniform Traffic Control Devices* (MUTCD). The Public Works Department will decide whether pavement markings and street signs will be done by the City or by the developer. If the work is to be done by the City, a written request must be submitted by the developer to the Public Works Department when pavement markings or street signing is needed, and the developer will be billed upon completion.

L. Naming

The developer must check with the Public Works Department 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. The Public Works Department will ensure that the name assigned to a new street is consistent with policies of the City.

An address number will be assigned to all new buildings. It is then the owner's responsibility to see that the building numbers are placed clearly and visibly at the main entrance to the property or at the principal place of ingress.

4.2.3 INTERSECTIONS AND ACCESS POINTS

A. General

Driveways and access points on all arterials, as defined in the Minimum Street Design Standards Table of this document, shall be designed and constructed in conformance with the latest standards established by the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and this document.

Access control includes:

1. Reduce the number of access points or increase their spacing so that vehicle conflict areas or maneuver areas do not overlap.
2. Limit the type of conflict by preventing certain turning maneuvers.
3. Remove turning vehicles or queues from through lanes.
4. Reduce the speed differential in through lanes between through vehicles and turning vehicles.
5. Consider the impact of access points on adjacent or nearby properties as well as across the street.
6. Intersection spacing shall conform to the requirements of Table 4.2.

B. Intersections

1. Traffic control will be as specified in the current edition of the *Manual on Uniform Traffic Control Devices* (MUTCD) or as modified by the Public Works Director as a result of appropriate traffic engineering studies.

2. Street intersections will be laid out so as 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 a crossroad (four-legged) intersection for local access streets. For safe design, the following types of intersection features should be avoided:
 - a. Intersection with more than four intersecting streets;
 - b. “Y”-type intersections where streets meet at acute angles.
 - c. Intersections adjacent to sight obstructions;
 - d. In no case will the angle of intersection be less than 60 degrees or greater than 120 degrees. The preferred angle of an intersection is 90 degrees.

Table 4.2: Intersection Spacing

| Street Classification | Desirable Distance (feet) | Minimum Distance (feet) |
|------------------------------|----------------------------------|--------------------------------|
| Major Arterial | 500-750 | 350 |
| Minor Arterial | 350-500 | 300 |
| Collector Street | 250-350 | 150 |
| Local Access | 250-350 | 150 |

C. Number of Access Points

No development shall have more than one access point unless the Traffic Impact Analysis or Emergency Service requirements determine that additional access points are needed to serve the expected volume of traffic; to establish efficient movement of vehicles, including trucks, buses, or emergency vehicles; to reduce traffic conflicts; and provided that adequate space exists.

D. Access Location Based on Street Class

When a development will be situated so that there is a choice of possible access points onto streets of different classes as defined in the Minimum Street Design Standards Table, then access shall be allowed only on the street of lower class, unless the Traffic Impact Analysis determines that the street of lower class cannot provide adequate access capacity, sight distance, separation or roadway intersections, safety, or vehicle maneuver area. However, an industrial or commercial development should not access a local access street as defined in the Minimum Street Design Standards Table if an alternative is available.

Access to corner lots shall be located on the minor street whenever possible and as close as possible to the property line most distant from the intersection.

E. Combined or Shared Access

Any development expected to generate no more than 50 peak-hour trips, according to trip generation data from ITE or other reliable sources, may be required to share access with an adjacent site or sites in order to reduce the total number of access points. When shared access is not feasible at the time of development but may be

feasible in the future, any access point(s) shall be located at or near the edge of the property and designed to facilitate future connection to/from adjacent sites, provided such location does not conflict with other provisions of these regulations. Traffic connections between sites shall be designed and located so as not to encourage high-speed traffic, traffic conflicts with pedestrians, or through traffic.

F. Spacing of Access Points, Same Side of Street

The numbers in Table 4.2 shall be the minimum distance allowed between the centerlines of adjacent access points. These numbers shall be the minimum distance allowed between the centerline of any access points served by a turn lane and the adjacent access point in the upstream direction or the centerline of an access point and the near side of the nearest street in the upstream direction.

G. Corner Clearance from Intersections

The guidelines provided below offer additional standards in establishing corner clearances. In cases where corner clearances are not attainable because property frontages are narrow, access should be located as close as practicable to the property line most distant from the intersection. At such locations, serious consideration should be given to physically prohibiting left turns into and out of the driveway.

H. 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 and will be subject to the same testing and inspection requirements as curb, gutter, and sidewalk construction.
3. Joint-use driveways serving two adjacent parcels may be built on their common boundary upon formal written agreement by both property owners and 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 8 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 will occur.
6. 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.
7. Driveways giving direct access onto arterials may be denied if alternate access is available. Deviations of these standards may be permitted by the Director or Public Works.

8. Multi-lane driveways shall have lanes delineated by paint stripes. Lanes in the same direction shall be delineated by a skip white line 4 inches wide. Lanes in opposite direction (if not separated by a median) shall be delineated by a double solid yellow line, with each stripe 4 inches wide.
9. The maximum driveway width for two-way access drives onto an arterial or collector shall be 24 feet for residential, 30 feet for commercial uses, and 35 feet for industrial uses. Maximum driveway widths for one-way access drives onto an arterial or collector shall be 20 feet for residential, 20 feet for commercial, and 25 feet for industrial uses. A wider driveway width may be approved where a substantial percentage of oversized vehicle traffic exists, where divisional islands are desired, or where multiple exit or entrance lanes are needed.
10. The maximum driveway width onto a local access street shall be 24 feet.
11. The angle between the extended centerline of a driveway and the centerline of the street being accessed shall be 90 degrees or as close to 90 degrees as feasible. In no case shall an angle of less than 60 degrees nor more than 120 degrees be allowed.
12. Signs, landscaping, and other onsite features near an access point shall be designed and located to provide clues to the location of the access point without interfering with drivers' sight distance and without significantly reducing the ability to see vehicles on the driveway or on the street.
13. A developer may be required to change and/or abandon existing curb cuts, driveway designs, and other access-related features established for a previous development or land use.
14. Commercial developments where access by trucks with trailer is not expected to be routine, the geometric design of access points shall be based primarily on the turning characteristics of passenger cars (defined by the AASHTO "P" design vehicle).
15. All driveways will be designed so that vehicles entering and exiting are able to turn without encroaching on adjacent lanes, either on the roadway or in the driveway.
16. Driveways must be noticeable to all drivers. This can be accomplished through the use of contrasting pavement driveway and curb color compared to the roadway. Contrasting pavement can help to guide and regulate drivers.

I. Drive-Through Windows

Drive-through windows and the approaches to them must be located and designed to accommodate on-site the maximum expected vehicle queue, with no spillover of the vehicle queue onto adjacent streets or adjacent sites and with no interference with vehicles, pedestrians, and bicyclists at points of access or egress.

J. Pedestrians and Bike Lanes

The point of intersection between streets and access drives serving developments shall be designed as much as feasible within the constraints of the given terrain and available land area to minimize interference with through traffic on the street and to minimize conflict between vehicles at the access point and between vehicles and pedestrians or bicycles.

As much as is feasible within the parameters of these regulations, access points and driveways shall be designed to minimize conflict between vehicles and pedestrians or bicycles. Access points and driveways shall be designed to minimize the total risk and delay for vehicles, pedestrians using sidewalks or crosswalks, and bicycle riders using bike paths, streets, or driveways. Sidewalks or bike paths crossing such access points shall be at grade.

4.2.4 SIGNALS

A. General

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.

All public signal designs will be prepared by an engineering firm capable of performing such work. The engineer will be licensed by the State of Washington. Approval of plans and specifications will be obtained before construction commences.

4.2.5 BIKE LANES

The design of bicycle paths will depend upon their type and usage. Normally bikeways are shared with other transportation modes, although they may be provided exclusively for bicycle use. The minimum design standards for bikeways will be as defined in the WSDOT Design Manual, Section 1020, Facilities for Non-motorized Transportation.

4.2.6 TRAILS

4.2.7 ROAD SIDE APPURTENANCES

A. Mailboxes

1. During construction, existing mailboxes will be accessible for the delivery of mail or, if necessary, moved to a temporary location. Temporary relocation 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.
 - a. Bottom or base of box will be 36 inches to 42 inches above the road surface.

- b. Front of mailbox 18 inches behind vertical curb face or outside edge of shoulder.
 - c. New Developments. Clustered mailboxes are required. Contact the U.S. Postal Service for details. See Detail *LS-Mlbx*.
2. Mailboxes will be set on posts strong enough to give firm support but not to exceed 4-inch by 4-inch wood or 1.5-inch diameter pipe, or material and design with comparable breakaway characteristics.

B. Guardrails

For purposes of design and location, all guardrails along roadways will conform to the criteria of the WSDOT Design Manual as may be amended or revised.

C. Retaining Walls

1. Rock walls may be used for erosion protection of cut or fill embankments up to a maximum height of 8 feet in stable soil conditions that will result in no significant foundation settlement or outward thrust upon the walls. For heights over 4 feet or when soil is unstable, a structural wall of acceptable design, stamped by a licensed structural engineer, will be used. Rock walls over 4 feet high will be subject to inspection by a geotechnical engineer.

Any rock wall over 30 inches high in a fill section will require an engineered design by a geotechnical engineer. The geotechnical engineer will continuously inspect the installation of the wall as it progresses and will submit inspection reports, including compaction test results and photographs taken during the construction, documenting the techniques used and the degree of conformance to the geotechnical engineer's design.

In the absence of such a rock wall design, walls having heights over 4 feet or walls to be constructed in conditions when soil is unstable require a structural wall having a design approved by the Public Works Department or the Public Works Department if outside the right-of-way. The design of structural walls will be by a professional structural engineer qualified in retaining wall design. Structural walls require issuance of a building permit prior to construction.

2. The rock material will be as nearly rectangular as possible. No stone will be used that 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 160 pounds per cubic foot.
3. The rock wall will be started by excavating a trench having a depth below sub-grade of one-half the base course or 1 foot (whichever is greater).
4. Rock selection and placement will be such that there will be minimum voids and, in the exposed face, no open voids over 6 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 placed at the base of the rockery so that the wall 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 2-inch square probe.

5. The wall backfill will consist of 12-inch washed rock or as specified by a licensed engineer. This material will be placed to an 8-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 6 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. Perforated drainage pipe and filter fabric will be installed pursuant to Detail *LS-Rck-Wll*. This pipe requirement may be waived by the engineer upon a showing by the developer that no subsurface water problem exists.

4.2.8 Parking Lots

Minimum requirements for parking lot capacity will be determined by the City per PMC 20.72. Parking lot surfacing materials for a permanent all-weather surface include asphalt concrete pavement and cement concrete pavement. Gravel surfaces are not acceptable or approved surface material types. 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. If the City determines the grass/paving system is not appropriate for the specific application, alternate approved surfacing materials will be utilized.

A parking lot construction permit is required prior to surfacing any unsurfaced designated parking area.

Storm water retention will be provided and will follow the criteria as set forth in Chapter 5 of these Standards.

4.2.9 Pavement Patching and Restoration

A. Temporary Restoration

Restoration of trenches will be accomplished by using 2-inch hot mix asphalt Class 1/2 PG 64-22 when available or 2-inch medium curing (MC-250) liquid asphalt (cold mix), UPM, 2-inch asphalt treated base (ATB), or steel plates.

ATB used for temporary restoration may be dumped 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 temporary patching material is stockpiled at the project site, both for completing and maintaining the temporary patching.

All temporary patches will be maintained by the contractor and will be made permanent within three (3) working days. Patches that are not properly maintained will be identified by the City Construction Inspector and repaired by the City at the developer's/contractor's/private utility's expense.

B. Pavement Restoration

Trench cuts in roadways greatly degrade the condition of the pavement, as well as reduce the design life. The most significant damage can be seen in newer pavements. A restored trench cut in a newly paved road lowers the Pavement Management System (PMS) rating 30 points (on a scale of 0 to 100). It is the goal of pavement restoration to have a pavement in better or as good as pre-trench cut condition. This can be achieved through prevention of trench cuts through utility coordination and high-quality pavement restoration.

Lane width restoration requirements for longitudinal utility trench cuts in pavements over five years old, a minimum 2-inch overlay or full-depth pavement reconstruction is required for the following widths:

1. One-lane overlay or reconstruction: when trench cut or patch is within one travel lane.
2. Two-lane overlay or reconstruction: when trench cut or patch is within two travel lanes.
3. Additional overlay or reconstruction: when the remaining pavement area to the edge of existing pavement on either side is less than one travel lane or pavement is less than five years old. No longitudinal joints will be allowed in the wheel path.

Transverse utility crossings must be bored or completed by another trenchless method. Bore pits must be restored pursuant to Section 4B.175(C).

Trench cuts are not permitted in pavements that have been constructed or rehabilitated within five years. Rehabilitation includes all asphalt overlays.

Exemption from Pavement Restoration Requirements and Financial Penalties. Utilities can appeal in writing directly to the Public Works Director for exemption from pavement restoration requirements and financial penalties associated with trenching in new pavements.

Utilities may be exempt from pavement financial penalties if there is no other viable alternative and under the following conditions:

1. If the City failed to give six months' notice of an upcoming roadway rehabilitation project either because of
 - a. a change in property ownership, or
 - b. a change in the City's Capital Facilities Plan

2. An emergency project requiring immediate attention for the preservation of life or property.

C. Construction Requirements

1. All trench and pavement cuts will be made uniformly by wheel or saw cutting. If edge of trench line degrades, ravel, or is non-uniform, additional saw cutting will be required prior to final patch or paving.
2. Tack will be applied to the existing pavement and edge of cut and will be emulsified asphalt grade CSS-1 as specified in the latest version of the WSDOT/APWA Standard Specifications. Tack coat will be applied as specified in Section 5-04 of the latest version 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 Public Works Director. Fine and coarse aggregate will be in accordance with Section 9-03.8 of the latest version of the WSDOT/APWA Standard Specifications. Asphalt concrete over 3 inches thick will be placed in equal lifts not to exceed 3 inches each.
3. Grinding. Connection to existing asphalt at centerline, lane edges, and overlay ends shall be made by grinding. Feathering of asphalt is not acceptable without written approval from the Public Works Director. Grind can be a few inches off centerline to avoid existing striping.
4. Surface smoothness will be pursuant to Section 5-04 of the latest version of the WSDOT/APWA Standard Specifications. The paving will be corrected by removal and repaving of the trench only.
5. Asphalt concrete pavement for wearing course will not be placed on any traveled way between October 1 and April 1 without written approval from the Public Works Director.
6. Asphalt for prime coat will not be applied when the ground temperature is lower than 50°F without written permission of the Public Works Director.
7. Asphalt concrete will not be placed on any wet surface, or when weather conditions otherwise prevent the proper handling or finishing of the bituminous mixtures.
8. All joints on trenching or overlays will be sealed using crack sealant as specified in the latest version of the WSDOT/APWA Standard Specifications Section 9-04.10 (ASTM D-1190)
9. When trenching within the roadway shoulder(s), the shoulder should be restored to its original or better condition.
10. The final patch will be completed as soon as possible and will be completed within three days after first opening the trench. This time frame may be adjusted if delays are due to inclement paving weather or other adverse conditions that may exist. However, delaying of final patch or overlay work is allowable only subject to the Public Works Director's approval. The Public Works Director may deem it necessary to complete the work within the three-

day time frame and not allow any time extension. If this occurs, the contractor will perform the necessary work as directed by the Public Works Director.

4.2.10 Traffic Calming Devices

Traffic calming in Pacific neighborhoods is used to improve neighborhood livability by reducing the speed and impact of vehicular traffic on residential neighborhoods by incorporating traffic calming devices. All traffic calming devices will be reviewed and approved by the Public Works Department. In new developments, the devices should be reviewed at the time of the preliminary design review and again upon final approval of the plans.

4.2.11 Survey Monuments

- A. All existing survey control monuments that are disturbed, lost, or destroyed during surveying or construction will be replaced with the proper monument as outlined in B below by a land surveyor registered in the State of Washington at the expense of the responsible builder or developer.
- B. A cast-in-place concrete surface monument with sufficient ferrous metal embedded to allow for detection by a magnetic detection device pursuant to City of Pacific standards is required. Cap will be Berntsen RB Series or brass plug marker.
- C. Required Monument Locations. Appropriate monuments will be placed as follows:
 - 1. At all street intersections;
 - 2. At the PC and PTs of all horizontal curves;
 - 3. At PI of all horizontal curves of streets where the PI lies within the limits of the traveled roadway;
 - 4. At all corners, control points, and angle points around the perimeter of subdivisions as required by the City.
 - 5. At all section corners, quarter corners, and sixteenth corners that fall within the right-of-way.
- D. The monument case will be installed after the final course of surfacing has been placed.

4.3 MATERIALS AND METHODS

4.3.1 General

Transportation workmanship and materials will be in accordance with the *Pacific Development Standards*, the most current copy of the WSDOT/APWA Standard Specifications, the KCSWDM, and according to the recommendations of the manufacturer of the materials.

4.3.2 Materials

Transportation systems materials shall meet the requirements of WSDOT/APWA Standard Specifications:

| | |
|--|----------------|
| Hot Mix Asphalt | Section 5-04.2 |
| Cement Concrete Pavement | Section 5-05.2 |
| Curbs, Gutters, and Spillways | Section 8-04.2 |
| Cement Concrete Driveway Entrances | Section 8-06.2 |
| Raised Pavement Markers | Section 8-09.2 |
| Monument Cases | Section 8-13.2 |
| Cement Concrete Sidewalks | Section 8-14.2 |
| Permanent Signing | Section 8-21.2 |
| Pavement Markings | Section 8-22.2 |

4.3.3 Construction Requirements

Transportation systems shall be constructed per WSDOT/APWA Standard Specifications:

| | |
|--|----------------|
| Clearing, Grubbing and Roadside Clean-Up | Section 2-01 |
| Roadway Excavation and Embankment | Section 2-03.3 |
| Sub-grade Preparation | Section 2-06.3 |
| Ballast and Crushed Surfacing | Section 4-04.3 |
| Asphalt Treated Base | Section 4-06.3 |
| Hot Mix Asphalt | Section 5-04.3 |
| Cement Concrete Pavement | Section 5-05.3 |
| Curbs, Gutters, and Spillways | Section 8-04.3 |
| Cement Concrete Driveway Entrances | Section 8-06.3 |
| Raised Pavement Markers | Section 8-09.3 |
| Monument Cases | Section 8-13.3 |
| Cement Concrete Sidewalks | Section 8-14.3 |
| Permanent Signing | Section 8-21.3 |
| Pavement Markings | Section 8-22.2 |

Testing

Testing will be required at the developer or contractor's expense. The testing will be ordered by the developer or contractor, and the chosen testing lab will be approved by the City construction inspector. Testing will be done on all materials and construction as specified in the WSDOT/APWA Standard Specifications and with frequency as specified herein. Copies of the test and sample results will be provided to the City within three days of the test results.

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LIST OF STANDARD DETAILS **CHAPTER 4 – TRANSPORTATION**

| | | |
|-----------------|---|------------------|
| | Major Arterial Street Section | ST-Mjr- Art |
| Don't have | Interim West Valley Highway Street Section | TR-Wst Vlly |
| | Minor Arterial Street Section..... | ST-Minor-Art |
| | Collector Street Section | ST-Collector |
| | Half-Street Section..... | ST-Half |
| | Local Access Street..... | ST-Local |
| | Alley Section/Private Road..... | ST-Alley/Private |
| | Trench – Pavement Restoration | ST-Util/Patch |
| Don't have | Asphalt Diamond Patch | TR-Dmnd-Ptch |
| | Poured Monument in Place | ST-Mon-PIP |
| | Surface Monument..... | ST-Mon-Surf |
| | Site Obstruction | TR-Site |
| | Site Distance Continued..... | TR-Site |
| | Site Distance | TR-Site |
| | Sidewalk w/o Planting Strip..... | TR-SW |
| | Parallel Curb Ramp..... | WSDOT F-40.12-01 |
| | Combination Curb Ramp | WSDOT F-40.14-01 |
| Replace w/WSDOT | Perpendicular Curb Ramp | WSDOT F-40.15-01 |
| | Single Directional Curb Ramp | WSDOT F-40.16-01 |
| | Detectable Warning Surface | WSDOT F-45.10-00 |
| | Cement Concrete Driveway Entrance Types 1, 2, 3, & 4..... | WSDOT F-80.10-01 |
| | Concrete Curb and Gutter | ST-CG |
| | Turn Arrow | TR-Chnl |
| | Pavement Markings | ST-Pvmnt Mrk |
| Don't have | Type III Barricade for Future Extended Roadways..... | TR-Brrd 3 |
| | Alternative Fire Apparatus Access Turn Around | TR-Hmmr-Hd |
| | Street Parking Space Markings | ST-Prkng-Stripe |

Update per
VRFA

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STORM DRAINAGE

5.1 GENERAL

The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of storm drainage facilities. Greater or lesser requirements may be mandated by the City due to localized conditions. Storm drainage revisions, additions, modification, or changes shall be made in compliance with City standards, ordinances, and Best Management Practices as identified by the *King County Surface Water Design Manual* (KCSWDM). Adequate provisions shall be made for storm drainage, storm sewers, and associated appurtenances sufficient to transmit maximum seasonal flows and one hundred year flood waters characterized by the area. The KCSWDM is the accepted drainage manual for the City of Pacific.

If warranted based on the condition and capacity of the existing storm drainage infrastructure (or lack thereof) and, impacts caused by the proposed development, off-site improvements may be required, at the City Engineer's discretion, to mitigate impacts caused by the proposed development.

5.2 DESIGN STANDARDS

Except as supplemented by these standards, the Storm water systems shall be designed and installed in accordance with the latest edition of the following documents (including all amendments and revisions thereto):

- *Standard Specifications for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the "WSDOT/APWA Standard Specifications").
- *Standard Plans for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the "WSDOT/APWA Standard Plans").
- *The Surface Water Design Manual* as published by King County Department of Natural Resources (referred to as the "Surface Water Design Manual" or the "KCSWDM."
- *Stormwater Management Manual for Western Washington (SMMWW)* as published by the Washington State Department of Ecology (reference document only).

Storm water system workmanship and materials will be in accordance with the *Pacific Development Standards*, the most current copy of the WSDOT/APWA Standard Specifications, the KCSWDM, and according to the recommendations of the manufacturer of the materials.

If the proposed development will increase the amount of storm runoff, it must be shown that the pipes and channels downstream from the discharge point (a minimum of 1/4 mile) can carry the increased runoff without damage to the adjoining properties or surcharging of the system.

Wherever possible, provisions should be made for detainage and/or retainage of storm water in order to decrease the amount of storm runoff and, more importantly, to decrease the peak runoff volume.

A copy of all computations and other data used for design of the storm water system shall be submitted with the plans to the City for approval.

5.2.1 Project Plans

Detailed plans shall be submitted for the City's review which provide the locations, size, and type of the proposed drainage system and points of connection. Project plans shall contain the following:

- A. A horizontal scale of not more than 1 inch = 50 feet and a vertical of not more than 1 inch = 10 feet.
- B. A north arrow and scale bar.
- C. Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); contours extending at least 50 feet beyond property lines; existing utility pipes with size and material; and appurtenances.
- D. Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines.
 - Pipe - location(s), diameter, length, material, slope, and relevant Detail reference(s)
 - Structure(s) – structure number, location(s), type and/or size, top elevation, invert elevations, necessary appurtenances, and relevant Detail reference(s)
 - Utility Crossings – water, sewer, and storm crossings shall be shown with invert and crown elevations, as required
 - Other appurtenances with relevant Details reference(s)
- E. The storm water system point of discharge to public or off-site system.
- F. A copy of the City Standard Storm Drainage Notes shall be included.

STORM DRAINAGE NOTES

- 1. See the City of Pacific Standard Notes on Sheet ____.
- 2. See the Construction Sequence on Sheet ____.
- 3. All storm drainage improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, engineer, and appropriate public agencies.
- 4. Storm drain pipe shall 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 shall conform to ASTM D 3034-73 SDR 35 for 4-inch thru 15-inch diameter PVC pipe, and shall conform to ASTM F 679 for 18-inch thru 27-inch diameter PVC pipe, with joints and gaskets conforming to ASTM D 3212 and ASTM F 477.
 - d. Ductile iron pipe conforming to the requirements of ANSI A21.51, and AWWA C 151, thickness class as approved by City Engineer.
 - e. Polyethylene smooth wall pipe per Advanced Drainage Systems (ADS) N-12, bell and spigot, constructed per WSDOT/APWA Standard Specifications 7-04. Note: This type of pipe will only be approved with the City's specific written approval. Approval shall be based on site specific conditions and if additional on-site inspection time for witnessing proper pipe installation can be scheduled by the City.
- 5. All pipes shall be suitable for use as a gravity drain conduit.
 - 6. The Contractor shall be required to place metallic tape over all non-metallic pipes. The metallic tape shall be a minimum of 2 inches in width and placed continuously the entire length of the storm drain trench.
 - 7. All trenches for storm drains shall be in accordance with the Section 7 of the current WSDOT Specifications for Roads, Bridges and Municipal Construction.
 - 8. All fittings shall be of like material as the pipe furnished by the pipe supplier.
 - 9. Where connections require "field verifications," connection points will be exposed by contractor and fittings verified prior to disruption of flow.
 - 10. Catch basins shall conform to Type I, Type II, or the Inlet Type as defined in said APWA Standards Specifications and Standard Plans with flat top frame and grate.
 - 11. All storm drainage structures, such as catch basins and manholes, not located within a traveled, paved roadway or concrete sidewalk, shall have locking lids. All drainage structures associated with a permanent detention facility shall have locking lids. All drainage structures located within a bike or walking path shall have locking lids.
 - 12. All catch basins grates shall include the stamping "Outfall to Stream, Dump No Pollutants".
 - 13. The cast iron frame may be placed flange down on adjustment blocks in lieu of precast collar. The installation of catch basins shall include final adjustment as may be required to finish grade. Installation within the paved roadway shall be per the City of Pacific Type I catch basin with 18-inch barrier curb detail unless specified as a thru-curb inlet.

14. Catch basins must be set to line grade using no more than two (2) adjustment rings.
15. Cast iron frame for Type I catch basin shall accommodate a 20-inch by 24-inch grate.
16. Catch basins at the Curb line shall be recessed 0.1 foot.
17. Special structures, oil/water separators, and outlet controls shall be installed per plans and manufacturers recommendations.
18. Minimum 1-foot separation between pipes in Type II catch basins.
19. All storm lines and catch basins will be high-velocity cleaned and pressure tested in accordance with Division 7 of the WSDOT/APWA Standard Specifications prior to paving in conformance with the WSDOT/APWA Standard Specifications. Hydrant flushing of lines is not an acceptable cleaning method.
20. All driveway culverts located within the Right-of-Way shall be of sufficient length to provide a minimum 3:1 slope from the edge of the driveway to the bottom of the ditch.
21. Clean-outs shall have cast iron cases.
22. Drainage outlets (Stub outs) shall be provided for each individual lot. Stub-outs shall conform to the following:
 - a. Each outlet shall be suitably located at the lowest elevation on the lot, so as to service all future roof downspouts, footing drains, driveways, yard drains, and any other surface or subsurface drains necessary to render lots suitable for their intended use. Each outlet shall have free-flowing, positive drainage to an approved storm water conveyance system or to an approved outfall location.
 - b. Minimum slope on roof and foundation drain stubs shall be 0.5 percent and have a minimum of 1 foot of cover. Roof drains and foundation drainpipes shall be constructed of PVC ASTM D3034 SDR 35, and ASTM F679.
 - c. Outlets on each lot shall be located with a section of PVC pipe marked "Storm" on the end of the pipe and shall extend 36 inches above the ground.
 - d. Drainage easements are required for drainage systems designed to convey flows through individual lots.
 - e. The Engineer/Contractor is responsible for coordinating the locations of all stub out conveyance lines with respect to utilities (e.g., Power, Gas, Telephone, Cable, etc.)
 - f. All individual stub outs shall be privately owned and maintained by the lot owner.

23. Overflow, spillways, gravel filter windows must be constructed per plans and specifications. No deviations. As-built for verification required.
24. Grass lined swale shall be constructed per the details provided. No deviations allowed. All swales must be operational before acceptance.
25. A low-pressure air test at 5 PSI for 15 minutes for sewer mains is required. The City of Pacific Maintenance Camera crew will video Sanitary Sewer and Storm Sewer mains. Call (360) 293-1921 to schedule appointment. 48-HOUR NOTICE REQUIRED.
(Section 7-17.3(2)H)
26. Any permanent flow control facility used as a temporary settling basin shall be modified with the necessary erosion control measures and shall provide adequate storage capacity. If the facility is to function as an infiltration system, the temporary facility must be graded so that the bottom and sides are at least 3 feet above the final grade of the permanent facility.
27. All storm drainage lines shall be television inspected prior to final acceptance by the City. A copy of the inspection data shall be provided to the City Engineer. The inspection shall include comparison of manhole/catch basin and side sewer locations shown on the storm drainage as-builts with TV Reports. Submit a CD with .mpg, .avi, .wmv, etc., format video upon request of the City Engineer.

5.2.2 Piped Conveyance System

Storm water conveyance piping shall meet the following criteria.

- A. They shall be constructed within a public right-of-way or easement. All easements to be dedicated to the City will have a minimum width of 15 feet centered on the pipe line, unless approved otherwise in writing.
- B. Conveyance pipes are to be sized to carry the maximum anticipated runoff for a 24-hour storm event without street flooding from the possible contributing area. The minimum main size will be 12 inches diameter in the right-of-way. Nothing will preclude the City from requiring the installation of a larger-sized main if the City determines a larger size is needed to serve adjacent areas or for future service. Storm drain lines on private property may be 8 inches in diameter.
- C. Storm water conveyance pipes are to be installed to the farthest property line(s) to serve adjacent tributary areas as may be warranted. They shall be appropriately sized to accommodate flows as further identified herein.
- D. All storm water pipes shall have a minimum of 24 inches of cover.
- E. Pipes sizing and slope shall be designed to facilitate a minimum 3 feet per second flow unless otherwise approved by the City Engineer.

- F. All pipe for storm mains shall be pre-approved by the City based on localized conditions and will comply with one of the following criteria:

| Material | Minimum Cover | Maximum Cover |
|-------------------------|---------------|---------------|
| Plain Concrete | 2 feet | 15 feet |
| Reinforced Concrete | 2 feet | N/A |
| Polyvinyl Chloride | 3 feet | N/A |
| Corrugated Polyethylene | 3 feet | 15 feet |
| Ductile Iron | 2 feet | N/A |

5.2.3 Structures

Storm water system structures shall meet the following criteria.

- A. They shall have a maximum spacing of 200 feet on road grades up to 3 percent.
- B. They shall have a maximum spacing of 300 feet when the road grade is 3 percent or greater.
- C. The spacing between access structures, whether catch basins or manholes, shall be 500 feet maximum.
- D. Structures shall be spaced so that no surface water (unless otherwise approved in writing by the City Engineer) crosses any roadway.
- E. Structures shall be placed whenever the length of surface drainage exceeds 300 feet on road grade, extending either direction from crest or sag on vertical curves.
- F. Vaned grates shall be provided on structures on street grades exceeding 6 percent slope.

5.2.4 Retention/Detention Facilities

Storm water retention/detention facilities shall conform to the following criteria.

- A. On-site detention systems shall be provided to ensure that storm water flow rates following development do not exceed the pre-development rates. The design of storm drainage and detention system shall depend on their type and local site conditions. The design elements of storm drainage systems shall conform to City Standards and the KCSWDM.
- B. Open on-site storm water facilities shall have a fence around the perimeter with a minimum height of 3 feet.
- C. The use of commercial parking lots for detention of storm water will be reviewed by the City Engineer and approved or denied based on the design, location, and general parameters of the project. The detention area shall be situated away from areas of pedestrian movement unless means

for rapid closing of the areas is incorporated in the design. The maximum depth of water in parking lot storage shall be limited to 6 inches. Curbs cannot be used for retaining storage.

5.2.5 Drainage Channels

The use of open vegetated channels to convey storm water runoff may be approved. However, this type of design will only be approved on a special basis as deemed necessary by the Public Works Director.

Open channels shall meet the following criteria.

- A. Channels shall meet the sizing requirements of piped conveyance systems.
- B. Channel depth shall not exceed 2.5 feet.
- C. They shall have a maximum side slop of 3H:1V.
- D. Channels shall be vegetated with grass or other vegetation as approved by the City.
- E. They shall have controlled velocities so as to prevent scouring of channel bottom and sides.
- F. Channels shall have debris barriers on piped outlets and inlets 12 inches and larger in diameter.

5.2.6 Connections to Existing System

Connections of storm drain pipe leading from an existing street inlet location may be made into an existing main storm drain only with a new structure, subject to case-by-case review and approval of the City Engineer or Public Works Field Inspector and subject to the following additional requirements:

- A. The inletting structure shall be a catch basin and not a simple inlet lacking a catch or drop section.
- B. Length of inlet connection shall be as approved by the City Engineer.

5.2.7 Outfalls to Existing System

Outfalls to public drainage courses shall meet the following requirements:

- A. Directed downstream
- B. The invert of the outfall shall be equal to the normal high water elevation of the receiving channel.
- C. The outfall shall have an energy dissipation facility.

5.3 MATERIALS AND METHODS

5.3.1 General

Storm water workmanship and materials will be in accordance with the *Pacific Development Standards*, the most current copy of the WSDOT/APWA Standard Specifications, the KCSWDM, and according to the recommendations of the manufacturer of the materials.

5.3.2 Materials

Storm water collection and conveyance systems materials shall meet the requirements of WSDOT/APWA Standard Specifications:

| | |
|--|----------------|
| Manholes, Inlets, Catch Basins, and Drywells | Section 7-05.2 |
| Erosion Control and Water Pollution Control | Section 8-01.2 |
| Chain Link Fence and Wire Fence..... | Section 8-12.2 |
| Riprap..... | Section 8-15.2 |

A. Pipe

Plain Concrete: Plain concrete pipe per WSDOT/APWA Standard Specifications as set forth in Section 7-04.

Reinforced Concrete: Reinforced concrete pipe per WSDOT/APWA Standard Specifications as set forth in Section 7-04.

Polyvinyl Chloride: PVC pipe shall conform to ASTM D 3034, SDR 35, or ASTM F 789 with joints and rubber gaskets conforming to ASTM D3212 and ASTM F477.

Corrugated Polyethylene: PE smooth interior wall pipe per Advanced Drainage Systems (ADS) N-12 (bell and spigot), or City approved equal, constructed per WSDOT/APWA Standard Specifications 7-04.

Corrugated Metal: Zinc-coated (galvanized) corrugated iron or steel pipe shall be coated uniformly with asphalt.

Ductile Iron: Ductile iron pipe shall conform to AWWA C151 Class 50 and have a cement mortar lining conforming to AWWA C104. All pipes shall be joined using non-restrained joints which shall be rubber gaskets, push on type or mechanical joint, conforming to AWWA C111.

5.3.3 Construction Requirements

Storm water collection and conveyance systems shall be constructed per WSDOT/APWA Standard Specifications:

| | |
|---|----------------|
| Structure Excavation | Section 2-09.3 |
| Ditch Excavation..... | Section 2-10.3 |
| Drains | Section 7-01.3 |
| Culverts | Section 7-02.3 |
| Structural Plate Pipe, Pipe Arch, Arch, and Underpass | Section 7-03.3 |
| Storm Sewers | Section 7-04.3 |
| Manholes, Inlets, Catch Basins, and Drywells | Section 7-05.3 |
| Cleaning Existing Drainage Structures | Section 7-07.3 |
| General Pipe Installation Requirements..... | Section 7-08.3 |
| Erosion Control and Water Pollution Control | Section 8-01.3 |
| Chain Link Fence and Wire Fence..... | Section 8-12.3 |
| Riprap..... | Section 8-15.3 |

A. Length of Open Trench

Pipe line construction shall be conducted to reduce the length of open trenches. The trenching and shoring in advance of the pipe laying shall not exceed 100 feet unless approved in writing.

B. Trenches in Existing Streets

All utility trenches excavated in the right-of-way shall be backfilled with 5/8-inch crushed rock. The trenches shall be backfilled and compacted to 95 percent density in accordance with WSDOT/APWA Standard Specifications 7-08.3(3).

C. Street Patching and Restoration


All utility trenches excavated in the right-of-way shall be restored and patched per Detail ST-Util/Patch.

D. Video Inspection

All storm drainage lines shall be television inspected prior to final acceptance by the City. A copy of the inspection data shall be provided to the City Engineer. The inspection shall include comparison of manhole/catch basin and side sewer locations shown on the storm drainage as-builts with TV Reports. Submit a CD with .mpg, .avi, .wmv, etc., format video upon request of the City Engineer. For new storm drainage systems connecting to existing drainage systems, video inspection shall include the point of connection and extend to the first downstream structure.

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LIST OF STANDARD DETAILS
CHAPTER 5 – STORM DRAINAGE

| | |
|--|----------------------------|
| Catch Basin Type I..... | SD-CB-Type-I |
| Catch Basin Type II | SD-CB-Type-II |
| Catch Basin - Flow Restrictor..... | SD- Flow-Rest |
| Catch Basin (Type II) or Manhole Grade Adjustment..... | SD-CB-Grade-Adj |
| Catch Basin Frame and Grate | SD-CB-Frm-Grt |
| Storm Drain Trench Section – Rigid Pipe | SD-Pipe-Rgd |
| Storm Drain Trench Section – Flex Pipe | SD-Pipe-Flx |
| Riprap and Energy Dissipation for Ditch..... | SD-Dtch-Energy Dissipation |
| New Ditch Construction | SD-Dtch-New |
|  Downspout Infiltration Trench | XXX |

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WATER

6.1 GENERAL

The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of water system facilities. Greater requirements may be mandated by the City due to localized conditions. Water system extensions, connections, or modifications to the existing system shall be in compliance with City Standards, City Ordinances, and the State Department of Health.

Off-site improvements to the existing system may be warranted based on:

- A. The condition and capacity of the existing water system, and
- B. The impacts caused by the proposed development.

These off-site improvements (in addition to “on-site improvements”) shall be completed as determined by the City Engineer to mitigate impacts caused by the development.

Any extension of the Pacific water system must be approved by the Department of Public Works, and all extensions must conform to Department of Health, the King County and/or Pierce County Coordinated Water System Plan, City of Pacific Water System Plan (WSP), and the Valley Regional Fire Authority requirements.

6.2 DESIGN STANDARDS

Except as supplemented by these standards, the Water systems shall be designed and installed in accordance with the latest edition of the following documents (including all amendments and revisions thereto):

- *Standard Specifications for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Specifications”).
- *Standard Plans for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Plans”).
- *The Water Design Manual* as published by Washington State Department of Health (referred to as the “Water Design Manual”).
- The Standards of the American Water Works Association
- *Recommended Standards for Water Works, (Ten State Standards)* as published by The Great Lakes Upper Mississippi Board of State Public Health and Environmental Managers.

In designing and planning for any development, it is the developer’s responsibility to see that adequate water for both domestic use and fire protection is attainable. The developer must show in the proposed plans how water will be supplied and whether adequate water volumes at acceptable pressure and velocity will be attained in case of fire. An analysis of the system may be required if it appears that the system might be inadequate.

A copy of all computations and other data used for design of the potable water system shall be submitted with the plans to the City for approval.

6.2.1 Project Plans

Detailed plans shall be submitted for the City's review which provide the locations, size, and type of the proposed water system and points of connection. These Plans can be combined with the Sewer Plans, if there is adequate space to clearly present the design and construction requirements. Project plans shall contain the following:

- A. A horizontal scale of not more than 1 inch = 50 feet. A vertical scale of not more than 1 inch = 10 feet, if required.
- B. A north arrow and scale bar.
- C. Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); existing utility pipes with size and material; and appurtenances.
- D. Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines.
 - Pipe - location(s), diameter, length, material, and relevant Detail reference(s)
 - Fittings - location(s), diameter, material, joint configuration(s), and relevant Detail reference(s)
 - Valve - location(s), size, necessary appurtenances, and relevant Detail reference(s)
 - Hydrant - location(s), appurtenances and relevant Details reference(s)
 - Service meter - location(s) and relevant Details reference(s)
 - Utility Crossings – water, sewer, and storm crossings shall be shown with invert and crown elevations, as required
 - Other appurtenances with relevant Details reference(s)
- E. A copy of the City Water System Notes shall be included.

WATER SYSTEM NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. All water system improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, engineer, and appropriate public agencies.

4. Water mains 4-inch diameter and larger will be ductile iron cement mortar-lined thickened. Materials are to conform to the latest revision of the following standards:
 - a. Ductile Iron Pipe design (AWWA C150/A21.50)
 - b. Ductile Iron Pipe manufacturing process (AWWA C151/A21.51)
 - c. Cement Mortar Lining (AWWA C104/A21.4)
 - d. Ductile Iron Pipe joints (AWWA C111/A21.11)
 - e. Ductile Iron fittings (AWWA C153/A21.53 and C110/A21.10)
5. Water Main Installation shall conform to the latest revision of Ductile Iron Pipe installation (AWWA C600)
6. Maintain a minimum 1-foot vertical separation and a 30-inch horizontal separation between the waterline and all other Utilities except Sanitary Sewer, which is to be a 10-foot horizontal separation. Waterline trench is not to be shared with other Utilities.
7. Trench excavation, bedding, and backfill for water mains shall be in accordance with section 7-10 of the current version of the WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction and the City of Pacific Development Guidelines for Public Works Standards trench details.
8. Maximum length of open trench shall be 100 feet.
9. The waterline shall be fitted with a watertight plug at any anytime work is delayed or stopped and overnight. If newly installed waterline is contaminated with ground water, the entire length of pipe affected shall be thoroughly cleaned prior to installing additional pipe.
10. All pipe and services will be installed with continuous tracer tape installed 12 inches to 18 inches under the final ground surface. The marker will be plastic non-biodegradable, metal core, or backing marked water, which can be detected by a standard metal detector. Tape will be Terra Tape D or approved equal. In addition to the tracer tape, blue toning (tracer) wire will be installed over all pipe and services. Toning wire will be UL listed, Type UF, 14-gauge coated copper taped to the top of the pipe to prevent stretching and damage. The wire will be brought up and tied off at valve body or meter setter with the end of the wire accessible to hook up to a locator (2 feet of slack). All toning wire splices and connections 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 days prior to the test is required.

11. Water Valves shall conform to Ductile Iron Resilient Wedge Gate Valves (AWWA C515). Acceptable manufacturers: American Flow Control, Clow, Kennedy, M&H, Mueller, or City approved equal.
12. System valves will be operated by City employees only.
13. At any connection to an existing line where a new valve is not installed, the existing valve must be pressure tested to City standards by the contractor prior to connection. If an existing valve fails to pass the test, the contractor will make the necessary provisions to test the new line prior to connection to the existing system or install a new valve.
14. At any water main tap to existing city mains where the contractor encounters a coupling or existing assemblies, the contractor will provide a minimum of 18 inches of clearance from coupling or assemblies to edge of tapping sleeve.
15. Any connection to an asbestos cement (A/C) water main shall require the replacement of at least one length of A/C water main with ductile iron pipe per Standard Detail C1C.
16. No connection to the existing mains will be allowed except by means of an approved backflow prevention device prior to satisfactory flushing, testing, disinfections, and receipt of satisfactory bacteriological test results.
17. Any persons performing Hot Taps shall be approved in advance by the City of Pacific. Spears Taps, Inc. at (425)485-4764 is an acceptable companies.
18. Fire Hydrants shall conform to the latest revision of Dry Barrel Fire Hydrants (AWWA C502). Acceptable manufacturers: AVK, M&H "Reliant" #929, Mueller, or City approved equal.
19. Fire hydrants will be bagged until system is approved. Hydrants will be painted with Parker Paint Marathon Enamel Safety Yellow paint or equal. All chains between caps and hydrants shall be cut and removed.
20. Fire Hydrants shall be set vertical plumb with the pumper port facing the street.
21. Fire Hydrants shall be set as such that the breakaway joint is no more than 6 inches above and no less than 3 inches above the finished grade.
22. There shall be 5-foot minimum clearance around the fire hydrants.
23. Fire Hydrants shall have a 5-inch Storz Rigid Female Adapter with cap and connecting cable.
24. The water services to the property line from the main line shall be 1-inch minimum copper and shall be installed in accordance with Section 7-15 of the current version of the WSDOT/APWA Standard

Specifications for Road, Bridge and Municipal Construction and the City of Pacific Development Guidelines for Public Works Standards.

25. Installation of Thrust Blocks shall conform to the City of Pacific Guidelines for Public Works Standards details, Thrust Block (TB). The Contractor shall use plastic sheeting to prevent contact between the concrete and the fittings. The City of Pacific Engineering Department shall inspect thrust Blocks prior to backfilling the trench.
26. The City will be given 10 working days' notice prior to scheduling a shutdown. The City of Pacific Water Section or City Inspector will perform the shutdown. Where connections require "field verification," connection points will be exposed by contractor and fittings verified two working days prior to scheduling City crews to distribute shutdown notices. The City will notify customers involved or affected of the water service interruption 48 hours in advance.
27. The City of Pacific Engineering Department must be notified at least 48-hours prior to commencing construction and for inspection requests. Inspections shall include pipe installation, pipe bedding, bagging, thrust blocking, pressure testing and trench backfill.
28. The Contractor shall notify and coordinate with the City of Pacific Water Department prior to the start of construction and prior to any water shut off or turn on that will affect the water system.
 - a. Scheduled waterline shut downs: 72-hours notice required. Contact Jim Schunke at (253) 929-1116 or (253) 261-5044 for scheduling. Water Department personnel will operate distribution valves.
 - b. Emergency waterline shut downs: Contact Jim Schunke at (253) 929-1116 or (253) 261-5044 or on call public works personnel at (253) 333-4522. The Water Department will be notified.
29. All mains will be disinfected conforming to Disinfections (AWWA C651).
30. All lines will be pressure and water quality tested in the presence of and under the supervision of the City of Pacific in conformance with the Specification 7-09.3. The contractor shall furnish all labor, equipment, and material to disinfect, flush, and conduct a pressure test of the completed waterline(s).
31. Dechlorinization will be required of all disinfection water flushed from waterlines which cannot be conveyed to existing Sanitary Sewer Systems.

6.2.2 Water Mains

Water Mains shall meet the following criteria.

- F. Water mains shall be constructed in dedicated street or easements. Easements to be dedicated to the City will have a minimum width of 15 feet.
- G. Lines shall be sized to provide for both domestic and fire flow requirements. Fire flow requirements will be as determined by the Valley Regional Fire Authority Fire Marshal, however, in no case shall it be less than 1,500 GPM at 20 psi residual pressure.
- H. Water mains shall be installed to the farthest property line(s) of the area being served.
- I. All water lines shall have a minimum of 36 inches of cover in improved (asphalt or concrete surfaced) areas. They shall have a minimum of 42 inches of cover in unimproved (non-hard surfaced) areas.
- J. All mains shall be looped and have a minimum diameter of 8-inches, unless approved in writing by the Public Works Director or the City Engineer. Over sizing of mains may be required per the City's current Water System Plan.
- K. Located on the north or east side of the road 5 feet from the centerline, unless approved in writing by the Public Works Director or the City Engineer.
- L. All water mains shall be ductile iron pipe. Mains 4 inches to 14 inches shall be Class 52. Mains 16 inches and larger shall be Class 50.

6.2.3 Water Main Fittings

Fittings for water mains shall meet the following criteria.

- A. Fittings shall be cement lined ductile iron.
- B. They shall be provided as necessary in the field to suit the construction and in accordance with the pipe manufacturers' recommendations so as not to exceed allowable deflection at pipe joints.
- C. All fittings shall be installed with thrust blocking per the City Standard Details for horizontal bends. Vertical bends shall be provided with anchor blocking in accordance with City Standards.

6.2.4 Water Valves

Valves for water mains shall meet the following criteria.

- A. 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 600 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.
- B. Each valve outside of asphalt or concrete surfaced areas shall be provided with a valve marker post.

6.2.5 Fire Hydrants

Fire Hydrants shall conform to the following requirements.

- A. They shall be located at 600-foot intervals in single-family and duplex residential areas and at 300-foot intervals in commercial and industrial areas, unless approved in writing by the Valley Regional Fire Authority Fire Marshal.
- B. A fire hydrant shall be located nearest to the traffic intersection.
- C. The last hydrant shall be no more than 300 feet from the last residential property.
- D. When any portion of a proposed building is in excess of 150 feet from a water supply on a public street, on-site hydrants will be required. Such hydrants will be located pursuant to the Valley Regional Fire Authority, and easements for such hydrants will be granted to the City.
- E. Requirement regarding use, size, and location of a fire department connection (FDC) and/or post indicator valve will be determined by the Building Official and the Valley Regional Fire Authority. Location of the FDC will be shown on the water plans.
- F. Where needed, the Department of Public Works or Valley Regional Fire Authority may require hydrants to be protected by two or more posts, each 4 inches in diameter by 5 feet in height, made of either reinforced concrete or steel.

6.2.6 Services

Water services shall be designed to meet the following criteria:

- A. All water services shall be located with the water meter within road right-of-way.
- B. Water services for adjacent properties shall be located at the common property line.
- C. Water service lines shall be installed perpendicular to the water main.
- D. All service connections relating to new development will be of the appropriate size as determined by industry standard and approved by the City of Pacific and installed by the developer at the time of mainline construction. After the lines have been constructed, tested, and approved, the owner may apply for a water meter. The City will install a water meter after the application has been made and all applicable fees have been paid.
- E. All new buildings and residences shall include in their water service a suitable pressure reducing valve to protect the plumbing from excessive pressures, unless waived on the application form of the City.
- F. All new construction shall comply with the "Accepted procedure and practice in Cross Connection Control Manual" as published by the Pacific Northwest Section of the American Water Works Committee", November

1985, Fourth Edition, and current amendments thereto. A copy of such is available for review at the City office.

- G. When water is desired to a parcel fronting an existing main but not served by an existing setter, an application must be made 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.
- H. Master meters will not be allowed for use in the City of Pacific water system.
- I. Service lines will be domestic, high-density polyethylene pipe, minimum pressure, Class 200 psi, Grade PE 3408. Glued joints will not be accepted. Service lines will be installed a minimum of 45 degrees off the main. Tracer tape and 14-gauge blue-coated wire wrapped around the pipe will be installed on all service lines.
- J. All meters shall be installed by the City, and the Developer shall pay the current meter installation charge.

6.2.7 Water System Appurtenances

A. Blow-Off Assemblies

If a fire hydrant is not located at the end of a dead-end main, a blow-off assembly will be required. On water mains that will be extended in the future, the valve that operates the blow-off assembly will be the same size as the main and provided with a concrete thrust block. The pressure rating for blow-off assemblies will be 200 psi. Installation will be as shown on Standard Drawing WT-Blow-off.

B. Air Vacuum Valves

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. The installation will be set at the high point of the line when required.

C. Pressure Control Devices

There are two uniform plumbing codes: one is prepared by the International Association of Plumbing and Mechanical Officials, another is prepared by the International Conference of Building Officials. Both codes require installation of pressure reducing valves in the water service pipe when street main pressure exceeds 80 psi.

Pressure of 45 to 60 psi will be maintained at the main during peak-day demands. A pressure of 45 psi provides adequate pressure at all the fixtures, and pressure above 65 psi results in excess water usage and is above the target level set in the City of Pacific Water Conservation Program.

When pressures reach 80 psi or above during static conditions, a pressure-reducing valve is required on the customer's side of the meter.

D. Cross Connection Control

No cross connections will be created, installed, used, or maintained within the City of Pacific water service area. All water system connections to serve buildings or properties with domestic potable water, fire sprinkler systems, or irrigation systems will comply with the minimum backflow prevention requirements as established by the DOH and the City of Pacific in its Cross Connection Program.

The installation of required backflow devices is necessary to protect the existing water system and users from possible contamination. All backflow prevention assemblies will be of a type and model pre-approved by the DOH or the City. Approved backflow prevention assemblies will be installed at the expense of the user, either at the service connection or within the premises, as determined by the City of Pacific Public Works Cross Connection Specialist in each of the following circumstances:

1. If the nature and extent of any activity on the premises, or the materials used in connection with any activity on the premises, or materials stored on the premises could contaminate or pollute the potable water supply.
2. On premises having one or more cross connections.
3. Internal cross connections that are not correctable or intricate plumbing arrangements that make it impracticable to ascertain whether or not cross connections exist.
4. A repeated history of cross connections being established or reestablished. Failure on the part of any customer to discontinue the use of all cross connections, except in accordance with the Standard, is sufficient cause for the immediate discontinuance of public water service to the premises (*Washington Administrative Code* 246-290-490). The City may install the appropriate backflow prevention device at the owner's expense.
5. Unduly restricted entry so that inspections for cross connections cannot be made with sufficient frequency or with sufficient notice to assure that cross connections do not exist.
6. Materials of a toxic, objectionable, or hazardous nature, either liquids, solids, or gases being used such that if back siphonage should occur, a health hazard could result.
7. Any mobile apparatus that uses the City of Pacific system or water from any premises within the City of Pacific system.
8. All uniform plumbing codes (UPC) must be maintained.
9. Assemblies installed at the point of delivery or on the internal plumbing system of any building shall not have galvanized piping attached to the inlet side of the assembly. Rigid piping, such as brass or copper, is allowed on the inlet side.

10. On any premise where installation of an approved backflow prevention device is deemed to be necessary to accomplish the purpose of these regulations in the judgment of the City of Pacific certified cross connection specialist.
11. Any use of radiant heat will require the installation of a reduced pressure (RP) backflow assembly at the meter.
12. A reduced pressure (RP) backflow assembly is required at all new commercial buildings and will be required to be installed when a change of use occurs at a commercial building. The RP device shall be installed at the meter.
13. On any premise where an appropriate cross-connection report form has not been filed with the office of the City of Pacific Public Works Department Water Section.
14. On any premise where a bypass arrangement is installed around a backflow assembly, a second backflow assembly of equal protection shall be installed on the bypass piping.

The City will have the authority to perform regular inspections on all backflow assemblies, both inside and outside any building connected to the City's water system and will be provided access to the premises to inspect.

The Public Works Department will get the certificate for testing of any backflow prevention assembly before releasing the Certificate of Occupancy on any building. A list of state-certified approved testers may be obtained from the City.

Backflow Prevention Assembly testers shall hold a current Washington State Department of Health Backflow Assembly Tester Certification.

The Valley Regional Fire Authority will test the fire line and obtain the certificate for underground piping. In any situation, the Valley Regional Fire Authority will not test the fire line until Public Works has tested and approved the main up to the fire line. Backflow assemblies for fire protection shall have integrated shutoff valves approved as part of the assembly and shall be separate from any post indicator valve installed on the fire service line. Double-check detector assemblies shall be required on all fire lines.

All backflow assemblies installed within the City of Pacific will be tested immediately upon installation by a Washington State certified tester and at least annually thereafter by a Washington State certified tester. All such devices found not functioning properly will be promptly repaired or replaced by the water user. If any such device is not promptly repaired or replaced, the City of Pacific may deny or discontinue water to the premise. All testing and repairs are the financial responsibility of the water user.

All testers shall use test procedures approved by the Washington State Department of Health.

All costs associated with purchase, installation, inspections, testing, replacement, maintenance, parts, and repairs of the backflow device are the financial responsibility of the water user.

E. Water Sampling Station

One water sampling station shall be provided to the City for each development in size of 1 to 10 lots. One additional sampling station shall be provided for each additional 50 lots or portion thereof. The water sampling station shall be furnished and installed at a location as determined by the City.

6.2.8 Connection to Existing Water Main

The developer's engineer will be responsible for determining the scope of work for connection to existing water mains. The City of Pacific Water Section will be consulted regarding fittings or couplings required.

The City of Pacific Water Section will make all shutdowns on existing mains. The contractor may operate the valve under the immediate supervision of a Water Section supervisor.

6.3 MATERIALS AND METHODS

6.3.1 General

Water Main workmanship and materials will be in accordance with the *Pacific Development Standards*, the most current copy of the *State of Washington Standard Specifications for Road, Bridge and Municipal Construction*, *American Water Works Association (AWWA) Standards*, and according to the recommendations of the manufacturer of the materials.

Material and installation specifications shall contain appropriate requirements that have been established by the industry in its technical publications, such as ASTM, AWWA, WPCF, and APWA standards. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling so as not to damage the pipe or its joints.

All new construction shall comply with the "Accepted procedure and practice in Cross Connection Control Manual" as published by the Pacific Northwest Section of the American Water Works Committee", November 1985, Fourth Edition, and current amendments thereto. A copy of such is available for review at the City office.

Cut in connections shall not be made on Fridays, holidays or weekends. All tapping sleeves and tapping valves shall be pressure tested prior to making connection to existing mains.

Contractor shall notify City's Water Superintendent and obtain approval from him prior to any water shut-off or turn-on, affecting the water system, a minimum of 48 hours in advance.

Road restoration shall be per City, County, or State design and construction standards, as may be applicable. Developer and Contractor shall become familiar with all State, County and City conditions of required permits, and shall adhere to all conditions and requirements.

6.3.2 Materials

Materials shall meet the requirements of WSDOT/AWWA Standard Specifications:

Water Mains..... Section 7-09.2

| | |
|------------------------------|----------------|
| Valves for Water Mains | Section 7-12.2 |
| Hydrants | Section 7-14.2 |
| Service Connections..... | Section 7-15.2 |

A. Pipe

All water mains shall be ductile iron pipe. Mains 4 inches to 14 inches shall be Class 52. Mains 16 inches and larger shall be Class 50.

B. Water Main Fittings

1. Fittings shall be cement lined ductile iron.
2. They shall be provided as necessary in the field to suit the construction and in accordance with the pipe manufacturers' recommendations so as not to exceed allowable deflection at pipe joints.
3. All fittings shall be installed with thrust blocking per the City Standard Details for horizontal bends. Vertical bends shall be provided with anchor blocking in accordance with City Standards.

C. Valves

1. All valves 12-inch and smaller shall generally be furnished and installed as resilient seat gate valves. The design, materials, and workmanship of all gate valves will conform to AWWA C509 or AWWA C-515, latest revision. Gate valves will be resilient wedge, nonrising stem (NRS), with two internal O-ring stem seals. Gate valves will be Mueller, M&H, Clow, Kennedy, or American Flow Control Series 500. Gate valves will be used on all 2- to 10-inch lines. Gate valves may be used on 12-inch lines.
2. All valves 14-inch and larger shall generally be furnished and installed as butterfly valves. Butterfly Valves. 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, M&H, Clow, Kennedy, or American Flow. Butterfly valves may be used for 12-inch lines.
3. All valves with operating nuts located more than 42 inches below finished grade shall be equipped with extension stems to bring the operating nut to within 18 inches of the finished grade. At the top of the extension stem, there shall be a 2-inch standard operating nut, complete with a centering flange that closely fits the 5-inch pipe encasement of the extension stem.
4. Each valve shall be provided with an adjustable two-piece cast iron valve box of 5 inches minimum inside diameter. Valve boxes shall have a top section with an 18-inch minimum length.
5. The valve boxes and covers shall be Rich No. 940 or equal. The valve box shall be set in a telescoping fashion around the 5-inch pipe cut to the correct length to allow future adjustment up or down. Valve Box. All valves will have a standard Rich 940 ductile iron water valve box set to grade. The valve box shall be installed such that the lugs line up with the direction of the pipe. If valves are not set in a paved area, a 1-foot by 6-inch thick circular concrete

pad shall be placed around the valve box. In areas where the valve box falls in the road shoulder, the ditch and shoulder will be graded before placing asphalt or concrete pad. Valve box lids will be ductile iron, shall be antikickout, and marked "City of Pacific Water."

6. Valve marker posts will be 4-inch carsonite CWV-116 posts stamped with "Caution Water Valve."
7. Tapping Valves. All tapping valves will be resilient seal, full open models manufactured by Mueller, Kennedy, Clow, M&H, or American Flow Control.
8. Air and vacuum release valves (ARV) will be APCO 147C or Clay valve combination air release valve.

D. Hydrants

1. Be approved by the National Board of Fire Underwriters and conform to AWWA Specification C502. They shall be a break-way type hydrant, in which the valve will remain closed '
2. Acceptable Models are: M&H "Reliant" #929, AVK, Mueller, or City approved equal.
3. Have a holding Spool constructed of Class 53 ductile iron, 6 inches in diameter, and be less than 17 feet in length, unless approved in writing by the Public Works Director or the City Engineer.
4. Hydrants will be painted with Parker Paint Marathon Enamel Safety Yellow paint.

E. Services

1. Residential water service pipe shall be 1-inch high plastic "Poly" pipe (no joints beneath pavement areas), meeting or exceed ASTM D2239, SDR-7 as manufactured by Driscopipe (CL 200), or City approved equal. Glued joints will not be accepted. Service lines will be installed a minimum of 45 degrees off the main. Tracer tape and 14- gauge blue-coated wire wrapped around the pipe will be installed on all service lines.
2. Meter services and meter boxes shall be set to final grade and all adjustments shall be made prior to final pressure testing of the system, centerline of service inlets shall be located to match bottom elevation of meter box in such a manner that meter inlet and outlet will be the same elevation as bottom of meter box. Contractor shall furnish angle dual check valve with neoprene gaskets for outlet connections to meter at City Utilities Department Public Works Yard for each service installed. Service inlet shall be centered at inlet end of box and faced toward outlet end of box parallel with long sides.
3. Service saddle will be ductile iron with double stainless steel straps. All clamps will have rubber gaskets. Service saddles shall have tapped IP threads.
4. Corporation stops will be all US brass and will be Ford, Mueller, or AY McDonald with IP threads conforming to AWWA C800.

5. Stainless steel inserts will be used with pack joints or Mueller 110 compression joints and polyethylene pipe.

F. Meters

All meters shall be installed by the City, and the Developer shall pay the current meter installation charge.

All 3-, 4-, and 6-inch meters will be Neptune with a remote automated encoder based meter reading system. Meters must be totally field programmable, including meter number. Three- and 4-inch meters will be within a manifold system.

G. Casing

Steel casing pipe will be Schedule 20 steel or equal. Pipe spacers will be Cascade Style CC5 with 8-inch runners as available from Cascade Waterworks. Casing pipe and spacers will be sized for pipe being installed. Install minimum of three spacers per section of pipe. The casing pipe will then be sand-packed.

H. Thrust Blocking

Location of thrust blocking will be shown on the plans. Thrust block concrete will be Class B poured against undisturbed earth. A plastic barrier will be placed between all thrust blocks and fittings.

Upon approval by the Public Works Director, MJ Mega Lug retainers, restraining rods, or Romac Grip Ring Retainers can be used in lieu of concrete thrust blocking.

6.3.3 Construction Requirements

Water mains and appurtenances shall be constructed per WSDOT/AWWA Standard Specifications:

| | |
|---|----------------|
| General Pipe Installation Requirements..... | Section 7-08.3 |
| Water Mains..... | Section 7-09.3 |
| Valves for Water Mains | Section 7-12.3 |
| Hydrants | Section 7-14.3 |
| Service Connections..... | Section 7-15.3 |

A. Length of Open Trench

Pipe line construction shall be conducted to reduce the length of open trenches. The trenching and shoring in advance of the pipe laying shall not exceed 100 feet unless approved in writing.

B. Trenches in Existing Streets

All utility trenches excavated in the right-of-way shall be backfilled with 5/8-inch crushed rock. The trenches shall be backfilled and compacted to 95 percent density in accordance with WSDOT 7-08.3(3).

C. Street Patching and Restoration

All utility trenches excavated in the right-of-way shall be restored and patched per Detail 21.

D. Service Interruption

Following application at Community Planning and Development for connection to the existing water main, the contractor will give the City a minimum of ten working days' notice of any planned connection to an existing pipeline. This includes all cut-ins and live taps. Notice is required so any disruptions to existing services can be scheduled. The City will notify customers involved or affected of the water service interruption 48 hours in advance. The contractor will make every effort to schedule water main construction with a minimum interruption of water service. In all situations, the City will dictate scheduling of water main shutdowns so as not to impose unnecessary shutdowns during specific periods to existing customers. The contractor is responsible for providing the necessary excavation and shoring to provide access to the existing water main for the City to make the tap. The excavating and shoring will conform to Labor and Industries (L&I) standards for worker safety. In the event the contractor does not have shoring conforming to L&I standards, the City will provide shoring at the contractor's expense.

E. Connection to Existing Water Main

A minimum of ten working days' notice following application at the Public Works Department is needed to schedule shutdowns. The City of Pacific Water Section will be consulted regarding fittings or couplings required.

It will be the Contractor's responsibility to field-verify the location and depth of the existing main and the fittings required to make the connections to the existing mains. All excavation, connections, piping, tapping, valve fittings, services, anchors, blocking, bedding, backfill, compaction, restoration, or other labor and materials required will be furnished and placed by the contractor. Any new connection to an existing City of Pacific water main will require backflow protection. A double-check assembly shall be installed between the new main and existing main for flushing and filling and shall remain in place until the new main is approved.

A list of City of Pacific-approved tapping contractors can be obtained at the Department of Community Planning and Development. The City of Pacific Water Section will be notified 48 hours (two working days) prior to the contractor performing the tap.

The City of Pacific Water Section will make all shutdowns on existing mains. The contractor may operate the valve under the immediate supervision of a Water Section supervisor.

F. Abandonments

At time of abandonment for any service line, the corporation shall be removed and a full circle stainless steel repair band shall be installed.

When a main line is abandoned, the abandonment shall occur back to the closest tee or cross, removing the valve and installing a blind flange or plug. In areas where the tees are lead-in fittings, the whole tee will be removed along with a small section of main.

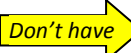
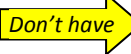
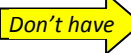
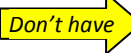
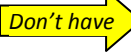
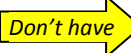
Fire hydrants shall be abandoned by removing the hydrant and lateral back to the main. A blind flange shall be installed on the tee.

G. Required Separation Between Water Lines and Sanitary Sewers

The basic separation requirements apply to all gravity and pressure sewers of 24-inch diameter or less; larger sewers may create special hazards because of flow volumes and joint types and accordingly require additional separation requirements. The required separation between water lines and sanitary sewer lines shall comply with Section C1-9.1 of the latest edition of *Criteria for Sewage Works Design*, Washington State Department of Ecology (Publication 98-37WQ).

LIST OF STANDARD DETAILS

CHAPTER 6 – WATER

| | | |
|--|---|-----------------------|
| | Water Main Trench Section | WT-Trnch |
| | Water Main Depth Requirements | WT-Main-Dpth |
| | Typical Utility Crossing..... | WT-Util-Xng |
| | Thrust Restrain for Ductile Iron Pipe..... | WT-Thrst-Res |
|  | Anchor Block | WT-Anch-Blck |
| | Thrust Blocks | WT-Thrst-Blck |
| | Wet Tap Connection | WT-Wet-Tap |
| | Cut In Connection | WT-Cut In |
| | Fire Hydrant Assembly | WT-FHA |
|  | Fire Hydrant Assembly - Relocated..... | WT-FHA-Rel |
| | Fire Hydrant Assembly in Cut or Fill | WT-FHA-C/F |
| | Water Service - ¾" and 1" Plan and Section | WT-Srvc-3/4-1-P&S |
| | Water Service - ¾" and 1" Notes..... | WT-Srvc-3/4-1-Nts |
|  | Water Service - 1 ½" and 2" | WT-Srvc-1.5-2 |
| | Water Service Vault - 3" Through 10" Plan and Section | WT-Srvc-3-10-P&S |
| | Water Service Vault - 3" Through 10" Notes | WT-Srvc-3-10-Nts |
| | Blow-Of Assembly | WT-BOA |
|  | Blow Off Assembly – End of Line | WT-BOA-End |
| | Air and Vacuum Release Assembly | WT-AVRA |
| | Water Sampling Station | WT-Smpl-Sta-1 |
| | Water Sampling Station | WT-Smpl-Sta-2 |
|  | Pressure Reducing Station – Plan and Section | WT-PRS-P&S |
| | Pressure Reducing Station - Notes..... | WT-PRS-Nts |
| | Valve Stem Extension..... | WT-Vlv-Ext |
| | Valve Box Adjustment..... | WT-Vlv-Adj |
| | Double-Check Detector with Fire Connection | WT-DCDFC |
| | Detector Double-Check Valve Assembly | WT-DDCVA |
| | Double Check Detector Assembly - Residential | WT-DCDA-Res |
|  | Reduced Pressure Backflow Device | WT-RPBD |
| | Fire Riser..... | WT-Fire Riser |

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SANITARY SEWER

7.1 GENERAL

The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of sanitary sewer facilities. Greater or lesser requirements may be mandated by the City due to localized conditions. Washington State Department of Ecology's Design Standards shall also be employed by the City in its review and approval of system connections, extensions, and/or modifications.

"Off-site" improvements may be warranted based on (1) the existing condition and capacity of the existing sanitary infrastructure and, (2) impacts caused by the proposed development. These off-site improvements (in addition to "on-site" improvements as may be warranted) will be as determined by the City Engineer so as to reasonably mitigate impacts caused by development.

Any extension of Pacific's sanitary sewer system must be approved by the Department of Community Planning and Development and must conform to the current City of Pacific Comprehensive (Master) Sanitary Sewer Plan, King County Wastewater Treatment Division, Department of Ecology (DOE), and Department of Health (DOH) requirements.

7.2 DESIGN STANDARDS

Except as supplemented by these standards, the Sewer system shall be designed and installed in accordance with the latest edition of the following documents (including all amendments and revisions thereto):

- *Standard Specifications for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (hereinafter referred to as the "WSDOT/APWA Standard Specifications").
- *Standard Plans for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (hereinafter referred to as the "WSDOT/APWA Standard Plans").
- *Criteria of Sewage Works Design* as published by Washington State Department of Ecology (hereinafter referred to as the "Sewer Design Manual").

All sewers will be designed as a gravity sewer whenever physically and/or economically feasible or as outlined in the Sewer System Plan. The layout and size 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.

New sewer systems will be designed on the basis of an average daily per capita flow of sewage as shown in Table 7.1. The figures presented are assumed to cover normal infiltration, but an additional allowance will be made where conditions are unfavorable. Generally, laterals and sub-main 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 Public Works Department for review and approval.

Table 7.1. Estimated Daily Sewer Flows

| Type of Establishment | Gallons per Person per Day (Unless otherwise noted) |
|---|--|
| Airports (per passenger) | 5 |
| Apartments – Multiple-family (per resident) | 65 |
| Bathhouses and swimming pools | 10 |
| Camps: | |
| • Campground with central comfort stations | 35 |
| • With flush toilets, no showers | 25 |
| • Construction camps (semi-permanent) | 50 |
| • Day camps (no meals served) | 15 |
| • Resort camps (night and day) with limited plumbing | 50 |
| • Luxury camps | 100 |
| • Cottages and small dwellings with seasonable occupancy | 50 |
| • Country clubs (per resident member) | 100 |
| • Country clubs (per nonresident member present) | 50 |
| Dwellings: | |
| • Boarding houses: | 50 |
| ➤ With flush toilets, no showers | 10 |
| • Luxury residences and estates | 150 |
| • Multiple-family dwellings (apartments) | 65 |
| • Rooming houses | 40 |
| • Single-family dwellings | 75 |
| Factors (gallons per person, per shift, exclusive of industrial wastes) | 35 |
| Hospitals (per bed space) | 250+ |
| Hotels with private baths (2 persons per room) | 60 |
| Hotels without private baths | 50 |
| Institutions other than hospitals (per bed space) | 125 |
| Laundries, self-service (gallons per wash, i.e. per customer) | 50 |
| Mobile home parks (per space) | 250 |
| Motels with bath, toilet, and kitchen wastes (per bed space) | 50 |
| Motels (per bed space) | 40 |
| Picnic parks (toilet wastes only) (per picnicker) | 5 |
| Picnic parks with bathhouses, showers, and flush toilets | 10 |
| Restaurants (toilet and kitchen wastes per patron) | 10 |
| Restaurants (kitchen wastes per meal serviced) | 8 |
| Restaurants additional for bars and cocktail lounges | 2 |
| Schools: | |
| • Boarding | 100 |
| • Day, without gyms, cafeterias, or showers | 15 |

Table 7.1. Estimated Daily Sewer Flows

| Type of Establishment | Gallons per Person per Day (Unless otherwise noted) |
|---|--|
| • Day, with gyms, cafeterias, and showers | 25 |
| • Day, with cafeteria, but without gyms, or showers | 20 |
| Service stations (per vehicle served) | 10 |
| Swimming pools and bathhouses | 10 |
| Theaters: | |
| • Movie (per auditorium seat) | 5 |
| • Drive-in (per car space) | 5 |
| Travel trailer parks without individual water and sewer hookups (per space) | 50 |
| Travel trailer parks with individual water and sewer hookups (per space) | 100 |
| Workers: | |
| • Construction (at semi-permanent camps) | 50 |
| • Day, at schools and offices (per shift) | 15 |

7.2.1 Project Plans

Detailed plans shall be submitted for the City's review which provide the locations, size, and type of the proposed sewer system and points of connection. These Plans can be combined with the Water Plans, if there is adequate space to clearly present the design and construction requirements. Project plans shall contain the following:

- A. A vicinity map.
- B. A horizontal scale of not more than 1 inch = 50 feet. A vertical scale of not more than 1 inch = 5 feet.
- C. A north arrow and scale bar.
- D. Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); existing utility pipes with size and material; and appurtenances.
- E. Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines.
 - Pipes - location(s), diameter, length, material, slope, and relevant Detail reference(s)
 - Structures – structure number, location(s), type and/or size, top elevation, invert elevations, necessary appurtenances, basement locations and elevations, and relevant Detail reference(s)
 - Utility Crossings – water, sewer, and storm crossings shall be shown with invert and crown elevations, as required
 - Other appurtenances with relevant Details reference(s)

- F. A copy of the City Standard Sewer System Notes shall be included.

SANITARY SEWER CONSTRUCTION NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. All sewer system improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, engineer, and appropriate public agencies.
4. All pipe and services will be installed with continuous tracer tape installed 12 inches to 18 inches below the proposed finished sub-grade. The marker will be plastic non-biodegradable metal core or backing, marked "sewer" that can be detected by a standard metal detector. Tape will be Terra Tape "D" or approved equal. The tape will be furnished and installed by the contractor.
5. 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. Toning wire will be UL listed, Type UF, 14-gauge copper taped to the top of the pipe to prevent movement during backfilling. The wire will be laid loosely enough to prevent stretching and damage. The wire will be wrapped to manhole or cleanout rings on gravity sewers. A 1-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 days prior to the test is required.
6. Bedding of the sewer main and compaction of the backfill material will be required.
7. All manholes or cleanouts outside the paved area will be installed with a concrete collar in accordance with Standard Plans.
8. After backfilling, but prior to paving, all mains and appurtenances will be inspected and approved by the City of Pacific Construction Inspector. Approval does not constitute final acceptance of the sewer line. The contractor will retain the responsibility to repair all deficiencies and failures revealed during all required testing for acceptance and through the duration of the warranty. It will be the contractor's responsibility to notify the City of Pacific for the required inspections. Any main or appurtenance backfilled prior to inspection will be re-excavated for inspection.

9. All lines will be high-velocity cleaned and subjected to a low-pressure air test pursuant to 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 under the direct supervision of the City. Immediately prior to television inspecting, enough water will be run down the line so it comes out the lower manhole and the line is flushed clean. Acceptance of the line will be made after the television inspection tape has been reviewed and approved by the inspector.
10. A vacuum test of all manholes in accordance with Pacific standards is also required. Testing will take place after all underground utilities are installed and compaction of the roadway sub-grade is completed.
11. Television inspection of existing lines shall be required when there are multiple sewer taps of existing mains for a single project.
12. All side sewers shall be extended to property lines. Pipe plugs will be required for side sewer if immediate connection is not to be made.
13. The new sanitary sewer line shall be plugged and not put into service until all lines have been cleaned, flushed, and tested. All sanitary lines shall be inspected by the City of Pacific and all testing shall be done in the presence of the City of Pacific Representative.
14. All PVC Sewer Pipe and fittings shall conform to and meet the requirements of the latest ASTM specifications D3034. Also,
 - a. Pipe and fittings shall meet Standard Dimension Ratio 35.
 - b. All sanitary sewer pipes shall bear the mark of the National Sanitation Foundation.
 - c. All pipes shall be suitable for use as a gravity sewer conduit.
 - d. Pipe shall have flexible joints.
15. All fittings and accessories shall be manufactured and furnished by the pipe supplier or be an approved equivalent and have bell and/or spigot configuration identical to that of the pipe. Manhole couplings corresponding to the size of the sewer pipe shall be used.
16. Six-inch PVC sanitary sewer pipe shall be used for side sewers. Side sewers will be constructed at a minimum slope of 2 percent at the locations shown on the plans and have a 6-inch test wye at the extremity, plugged and blocked for testing and future use. Side sewers wye shall be factory made with matched ends for rubber gasket fittings, no cut in tees shall be permitted. *A side sewer grade that is less than 2 percent may be approved only by the Engineer and the City of Pacific upon written request.*

17. The end of each sanitary sewer stub shall be marked with a pressure treated 2x4. It shall be placed at the flow line of the stub and extend 4 feet above finished grade. There shall be a permanent mark labeled "SEWER" with a depth to the flow line shown on the 2x4.
18. Rubber gasket shall be installed properly to avoid water infiltration into the manhole.
19. When connecting the pipe to manholes, use A-LOK flexible connector, KOR-N-SEAL by NP, Inc., or approved equivalent. The pipe to manhole connections require flexible connectors; see WSDOT/APWA Specifications Section 7-05.3.
20. Pick holes shall be grouted from the inside and outside and are to be inspected prior to backfill of the manhole by the City Inspector.
21. Manhole frames and lids shall be sloped to conform to the street grades.
22. Tops of manholes within the Public Right-of-Ways shall not be adjusted to final grade until just prior to paving.
23. All manholes and clean-outs in unpaved areas shall include a concrete collar around the adjustment rings per the current *Pacific Development Standards*.
24. All manholes shall be protected from intrusion of rocks, gravel, water, and other debris during construction. The Contractor shall install, at all connections to existing downstream manholes, screens or plugs to prevent foreign material from entering existing sanitary sewer system. Screens or plugs shall remain in place throughout the duration of construction and shall be removed along with the collected debris at the time of final inspection and in the presence of a designated representative of the City of Pacific. Call (253)929-1110 to schedule an inspection. Allow 24-hours notice.
25. The flow channel inside each manhole shall be formed of cast-in-place Portland cement concrete. Channel shall have a semi-circular cross-section and smooth, uniform slope from inlet to outlet. Where three or more pipes are connected to one manhole, the flow channel shall be formed to smoothly direct flow from inlets to outlet.
26. Steps consisting of 1-inch diameter hot bent and galvanized deformed bars shall be installed at 1-foot centers.
27. All testing and connections to the existing mains shall be done in the presence of a designated representative of the City of Pacific. Call (253)929-1110 to schedule an inspection. Allow 24-hours notice.
28. A low-pressure air test at 5 PSI for 15 minutes for sewer mains is required. Pretesting is required. Rescheduling a failed test may result in several days delay due to conflicts with other projects. Call (253) 929-1110 to schedule an inspection. Allow 24-hours notice.

7.2.2 Gravity System Conveyance

Gravity sewer lines shall meet the following criteria.

1. Sewer mains shall be constructed in dedicated streets or easements. Easements to be dedicated to the City will have a minimum width of 15 feet.
2. The minimum size for collectors and interceptors will be 8-inch diameter. Collectors and interceptors will be sized for the ultimate development of contributing areas.
3. Main line sewers, unless otherwise approved by the Public Works Director, will be constructed using materials conforming to one of the following:
 - a. PVC pipe, 6-inch to 15-inch diameter, must meet either ASTM D 3034, SDR 35 solid wall pipe or ASTM F 794 for solid seamless profile pipe.
 - b. PVC pipe, 18-inch to 27-inch diameter, will conform to ASTM F 679 Type 1 only.
 - c. All joints for PVC pipe will conform to ASTM D 3212 with rubber gaskets conforming to ASTM F 477. Ribbed pipes will not be allowed for use in the sanitary sewer system.
 - d. Ductile Iron Pipe shall be Class 52 conforming to AWWA C151 and C104.
4. Located on the southerly and westerly side of the road 5 feet from the centerline, unless approved in writing by the Public Works Director or the City Engineer. A horizontal separation of 10 feet between the water and sewer line shall be maintained.
5. Gravity sewer will maintain a minimum depth of 3 feet in public right-of-way, unless otherwise approved, to provide gravity service to adjoining parcels, adequate head room within manholes for maintenance personnel, future areas to be served, and vertical clearance between water and sewer lines. Actual depth will be determined by slope, flow, velocity, and elevation of existing system.
6. All sewers will be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 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 City if deemed justifiable on the basis of research or field data submitted. The following minimum slopes should be provided; however, slopes greater than these are desirable.
7. Under special conditions, slopes slightly less than those required for the 2.0 feet per second velocity may be permitted by the Public Works Director. 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 with the plans his computations of the depths of flow in such pipes at minimum, average,

and daily or hourly rates of flow. Larger pipe size will not be allowed to achieve lesser slopes.

8. Sewers will be laid with uniform slope between manholes.
9. Gravity sewers will be designed with straight alignment between manholes. When visibility cannot be maintained between sewer structures along the straight alignment of a sewer, toning wire will be installed over the pipe. When required, the toning wire will be installed at a depth no greater than 48 inches. Toning wire will be UL listed, Type UF, 14-gauge copper, taped to the top of the pipe to prevent movement during backfill. The wire will be laid loosely enough to prevent stretching and damage. The wire will be wrapped to manhole or cleanout rings on gravity sewers and will be accessible from ground level.
10. Where velocities greater than 15 feet per second are expected, special provisions such as thrust blocking and piping materials will be made to protect against displacement by erosion and shock and the presence of hydrogen sulfide gas.

7.2.3 Gravity System Structures

Gravity sewer structures (manholes) shall meet the following criteria.

1. Manholes will be provided at a maximum of 400-foot intervals at intersections and at changes in direction, grade, or pipe size.
2. Manhole diameter will be determined by the number of connecting pipe as shown in Table 7.2.

Table 7.2 Manhole Sizing Requirements

| Manhole Size | Connecting Pipes |
|--------------|--|
| 48-inch | Two: 8-inch to 12-inch diameter. Three: 8-inch to 10-inch diameter, perpendicular. Four: 8-inch diameter, perpendicular. |
| 54-inch | <ul style="list-style-type: none"> • Two: 8-inch to 12-inch with more than 45° deflection. • Three: 10-inch to 12-inch diameter, perpendicular. • Four: 10-inch to 12-inch diameter, perpendicular. |
| 72-inch | <ul style="list-style-type: none"> • Two: 15-inch to 18-inch diameter with less than 45o deflection. • Three: 15-inch diameter, perpendicular. • Four: 15-inch diameter, perpendicular. |

1. For other pipe configurations, the size of the manhole shall be submitted for approval to the Public Works Director.
2. Where a smaller sewer 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.
3. The angle between the line(s) entering a manhole and the line leaving will be no less than 90 degrees.

3. The minimum manhole frame opening will be 24 inches. Eccentric manhole cone will be offset so the manhole cover will not be located in the tire track of a travel lane.
4. Manhole lids shall have the word "SEWER" cast into them. Manholes located outside of pavement areas shall have a locking lid. The lock-type casting device will be such that the cover may be readily released from the ring and all movable parts will be arranged to avoid possible binding.
5. Slope through the manhole will be a minimum 1/10 of 1 foot from invert in to invert out, unless otherwise approved by the Public Works Director.
6. 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.
7. 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.
8. All manholes that are to be owned and maintained by the City will be accessible at all times to operations and maintenance equipment and vehicles. At the discretion of the Public Works Director, access drives may be required to provide a sufficient driving surface for City vehicles.
9. Drop structures shall be avoided when possible. If drop structures are permitted they will conform to the following:
 - a. 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. Outside drop structures will be constructed pursuant to Detail ODMH.
 - b. Inside drop connections will not be allowed, except as approved by the Public Works Director, when an outside drop is not possible (see Standard Drawing IDMH).

7.2.4 Gravity System Clean-outs

Sewer cleanouts shall meet the following criteria.

1. Cleanouts are not an acceptable substitute for manholes; however, they may be used in lieu of manholes at the end of 8-inch diameter lines of not more than 150 feet in length. Location of cleanout for building sewers are governed by the International Plumbing Code as adopted.
2. Cleanouts on large diameter pipes are acceptable as a temporary structure for pipe lengths less than 150 feet. Requests for large diameter cleanouts will only be considered on the sewer lines that will be extended in the future. At no time will a cleanout be substituted where a manhole is required.
3. All cleanouts in City right of way will be extended to grade. See Detail ____.

7.2.5 Connections to Existing Gravity System

Connections to the existing sewer system shall meet the following criteria.

1. At connection to 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 cored holes drilled for the connection. The transition of connecting channels will be constructed so as not to interrupt existing flow patterns. All connections will utilize Kor-N-Seal fittings.
3. Connection of a pipeline to a system where a manhole is not available 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 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.
5. Taps will be done by use of a core drill and will not be allowed to protrude into the existing main. The City will be notified 48 hours (two working 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.

7.2.6 Gravity System Service Connections

A building or side sewer refers to the extension from a building sewer beginning 5 feet outside the outer foundation wall at the structure to the sanitary sewer main. Building sewers (lateral or side sewer) shall meet the following criteria.

1. The minimum size for a lateral (building or side sewer) within the street right-of-way will be 6 inches. Commercial building sewers from the right-of-way line to the structure will be minimum 6-inch diameter. Residential building sewers from the right-of-way line to the structure will be minimum 4-inch diameter.
2. All building sewer connections to the main will be made with a sanitary tee connection.
3. They shall be located at the lowest property corner 10 feet from the property line. On new subdivisions, the line shall extend 10 feet beyond the right-of-way line.
4. A 6-inch cleanout assembly with water tight cap will be provided at the edge of the right-of-way per Detail SSD.
5. All new mains connecting to existing mains will require the installation of a new manhole if not made at an existing manhole.
6. Each property will be served by an individual building sewer. In addition, both units of duplexes will be served by separate laterals. Maintenance of the

building sewer, up to and including the connection point at the right-of-way, will be the responsibility of the property owner. Prior to connection of a building sewer to the public sewer, a connection permit must be obtained from the City.

7. Materials and design criteria for a building sewer are covered by the International Plumbing Code as adopted. Inspection of the building sewer will be the responsibility of the Public Works Department inspectors.

7.2.7 Pressure Sewer System Lift Stations

All lift stations will be designed to serve the appropriate basin as identified in the *Pacific Sewer Plan*.

The design of any lift station will conform to City standards, Department of Ecology's *Criteria of Sewage Works Design* (most current Edition), and applicable standards as set forth herein.

Each lift station will be evaluated for buoyancy resistance using site specific soil and groundwater information.

The following equipment and special modifications are standard requirements for all permanent wastewater lift stations constructed within the City of Pacific. The following requirements are minimum standards and not all-inclusive.

1. The proponent is required to provide the City of Pacific a fee simple site outside existing right-of-way for construction of the lift station. The site will have sufficient area with dimensions that allow for easy and safe access to the lift station.
2. A concrete slab 6 inches in depth will surround the pump station wet wells and dry wells, with a minimum of 2 feet side exposure for all openings. The slab will be continuous between the wet well and the dry well and will be installed at ground level.
3. 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.
4. The dry well will be vented with an exhaust fan to meet state safety standards.
5. Wet well will be provided with a permanent, attached, full-depth internal galvanized access ladder, impervious to corrosion.
6. Entry lid to the station wet well will be located closest to the access drive. The lift station will be accessible at all times to operations and maintenance equipment and vehicles.
7. Entry lid to the station dry well will be constructed of aluminum with rustproof coating or fiberglass.
8. Station entry access will be keyed to match all other city package stations.
9. Dry wells will be provided with an automatic sump pump plumbed to the lift station wet well.

10. Dry wells will be provided with dehumidifier equipment appropriately sized to remove moisture from the dry well.
11. Safety guards will be provided for all exposed drive lines and couplings.
12. Spare parts will be provided as recommended by the manufacturer, with a minimum of one spare impeller, one complete set of seals, filters, and one set of volute gaskets. Four complete sets of operation and maintenance 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.
13. The pumps, motors, and wet well will be in compliance with current engineering practices. They will be fully compatible as an assembly and will be engineered for the specific basin.
14. The station will be designed to have 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.
15. 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 Washington State Approved Backflow Prevention Assembly Tester prior to acceptance of the system. The backflow device will be covered by a hot box to prevent freezing.
16. A 100-amp minimum 480/277-volt, 3-phase, 4-wire main service will be provided pursuant to plans.
17. All electrical equipment will be enclosed in a free-standing, vandal-proof, all-weather enclosure, NEMA 3R or better.
18. A 100-amp minimum, 480-volt, 3-phase emergency power hookup will be provided. The transfer switch will be sized to accommodate the load with a 100-amp minimum. The receptacle will be Crouse-Hinds AREA-10314 or Appleton ADR-1033 4- wire, 3-pole with male pins.
19. The electrical equipment will include a 5 KVA minimum transformer in the dry well for the 120-volt, single-phase equipment.
20. Wiring will be THHN stranded copper.
21. Lift station will be provided with telemetry system compatible with the City telemetry System. The telemetry will be enclosed in a NEMA 1 enclosure within the electrical cabinet. Prior to ordering the above equipment, the contractor will contact the City of Pacific Department of Public Works, for complete ordering specifications for the above telemetry.
22. The system will possess a solid state liquid level sensing device of the 4-20ma analog design. The controller will be compatible with all established city systems and will be accessible for ease of maintenance.
23. Pump motors will be 3-phase, 480-volt, and be provided with elapsed time meters.

24. Verification of operating parameters by City personnel, such as pump operation, alarms, and an electrical inspection, is required prior to acceptance of all lift stations.
25. Wet Well Sizing Criteria:
 - a. Provide a holding period not to exceed 10 minutes for the design average flow pursuant to DOE Criteria for Sewage Works Design, Section C.2-1.2.
 - b. Provide for a minimum of 45 seconds pump run time per pump cycle and a maximum of ten pump cycles per hour.
26. Lift Station Emergency Storing Criteria:
 - a. Emergency storage will be provided for 2 hours of design average flow using a peaking factor of 2. This calculation is to be submitted with the system design and approved by Public Works staff.

Note: The 2-hour time was determined as an average response time by a City crew. The peaking factor was set at 2, as opposed to 3 or 4, due to typical emergency being caused by power outage.
 - b. The requirement for on-site emergency power will be evaluated for each lift station by the City of Pacific.
27. Pump station design will be a wet well-dry well, as manufactured by Smith and Loveless, Paco, or Hydronix, and currently in use by the City of Pacific, or equal. Plans and specifications must be submitted and approved in writing prior to ordering a package lift station.

7.2.8 Pressure Sewer System Force Mains

Low-pressure systems; i.e., force mains, may be considered for situations where a high ground water table or topography make gravity sewer impractical. (*STEP systems are addressed separately in Appendix D*).

1. 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 7.1 in Section 7.2. A coefficient of friction of 120 will be used for the Hazen-Williams “C” value, or 0.013 for Manning’s “N” value.
2. 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.
3. Force Mains shall be Ductile Iron Pipe Class 52 conforming to AWWA C151 and C104.
4. Privately owned pressure mains shall have a control valve installed on the main at the right-of-way.

5. Grinder sewers may be allowed to connect to gravity sewer mains.
6. Minimum pressure sewer pipe size for lift stations shall be 4-inch diameter.
7. Depth. Force mains will have a minimum 30 inches of cover to top of pipe. See Section 6.3.3.G for sanitary sewer/water main crossing requirements.
8. The minimum velocity allowed is 3 feet per second (fps) at average dry weather flow. Three fps is required to scour settled solids. Maximum velocity allowed will be 6 fps.

7.2.9 Pressure Sewer System Air/Vacuum Valves

Air release valves and air/vacuum valves will be constructed as shown in Standard Drawing AVRA and 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 and the walls. Air release valves will be fitted with an activated carbon canister sewer guard 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 valve is required for maintenance.

7.2.10 Pressure Sewer System Force Main Drain

Provisions to drain a force main to facilitate repairs or to temporarily remove force main from service will be provided. This may be accomplished through the use of a tee with valves connected to a drain line at the low point of the line, with isolation valves on both sides of the tee along the main. A manhole will be set over the force main at the tee with valves.

7.2.11 Pressure Sewer System Thrust Blocking

Location of thrust blocking will be shown on plans. Thrust block concrete will be Class B, 3000 psi, poured against undisturbed earth. A plastic barrier will be placed between all thrust blocks and fittings.

Restraining joint systems may be allowed in lieu of thrust blocking when designed by a licensed engineer and approved by the City of Pacific Public Works Director. Restraining joint brand, type, and size will be specified on the plans. See Standard Detail TRDIP in Water Section.

7.2.12 Pressure Sewer System Force Main Termination

Hydrogen sulfide odors (H_2S) and the buildup of sulfuric acid (H_2SO_4) 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 near the terminus.

The outfall manhole (point of connection where force main discharges into gravity sewer) and the next downstream manhole on the gravity sewer will be lined with PVC to protect the system against corrosion. Spray-on coatings will not be accepted. The PVC lining will be cast into the walls and floor of the manhole. No exposed concrete will be permitted. All work will be done in accordance with manufacturer's recommendations and must be approved by the City. If a new outfall manhole and subsequent downstream structures are installed as part of the new system design, the configuration will be

approved by the City. In all other cases, the PVC liner will be installed in previously existing system manholes.

The downstream gravity sewer line pipe connecting these manholes will also be protected from the effects of hydrogen sulfide.

7.2.13 GRINDER PUMP SYSTEM

A grinder system is a facility consisting of a holding tank, grinder pump, and pressure piping system for conveying the wastewater and solids into the sewer system. Only sanitary wastewater shall be discharged into the tank; roof drains and other storm water sources shall be strictly excluded.

Grinder pump system may be installed to serve one or multiple residential and commercial user(s) only where approved by the City. A grinder pump application with approved site plan is required. Commercial grinder systems that have kitchen or cooking facilities, such as churches, community gathering places, restaurants, schools, etc., shall require installation of a grease trap.

All grinder systems shall be owned and maintained by the customer. The City shall take over ownership and maintenance at the valve connection to the main at the right-of-way.

Power will be provided and paid by the customer.

All sewer pipe, drains, and plumbing between the building and force main before discharging to the sewer main will be the responsibility of the customer.

Currently, the City recommends the E-One Grinder System for a single-family connection.

A. Grinder System Force Main

All pipe will be installed with continuous tracer tape installed 12 to 18 inches under the proposed finished grade. The marker tape will be marked “sewer” and be plastic, non-bio-degradable 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, install 14-gauge-coated copper wire wrapped around the pipe, brought up, and tied off at the valve boxes.

A 1-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.

B. Grinder System Mainline.

The minimum pipe size used is 2 inches nominal diameter. This is based on maintenance requirements rather than flow. Pipe will be high density polyethylene (HDPE), ASTM D2239, **SDR** 7. Mains will have a minimum 36 inches of cover to top of pipe. See Chapter 6.3.3.G for sanitary sewer/water main crossing requirements. Main lines will be the following diameters: 2, 3, 4, 6, 8, . . .

C. Grinder System Service line.

Service connection pipe will be minimum 1-inch diameter, HDPE, located at 90 degrees to the mainline when possible. Fittings will comply with ASTM D 2564 and will be used as recommended by the pipe and fitting manufacturers.

Services will have a minimum 24 inches cover to top of pipe.

Pressure services crossing over any waterline will follow DOE requirements.

D. Grinder System 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 by the City. The owner will be responsible for maintenance of the building sewer.

7.3 MATERIALS AND METHODS

Sewer workmanship and materials will be in accordance with the *Pacific Development Standards*, the most current copy of the WSDOT/APWA Standard Specifications, and according to the recommendations of the manufacturer of the materials.

Material and installation specifications shall contain appropriate requirements that have been established by the industry in its technical publications, such as ASTM, AWWA, WPCF, and APWA standards. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling so as not to damage the pipe or its joints.

7.3.1 Materials

Sewer mains and appurtenances shall meet the requirements of WSDOT/APWA Standard Specifications:

| | |
|--|----------------|
| Manholes, Inlets, Catch Basins, and Dry Wells..... | Section 7-05.2 |
| General Pipe Installation Requirements..... | Section 7-08.2 |
| Water Mains..... | Section 7-09.2 |
| Valves for Water Mains | Section 7-12.2 |
| Sanitary Sewers..... | Section 7-17.2 |
| Side Sewers..... | Section 7-18.2 |
| Sewer Cleanouts..... | Section 7-19.2 |

A. Gravity Conveyance

Gravity sewer mains will meet the following:

PVC pipe conforming to ASTM P 3034 SDR 35, ASTM F 794, or ASTM F 679 Type 1 with joints and gaskets conforming to ASTM 3212 and ASTM F 477.

Ductile iron pipe shall conform to ANSI A 21.51 or AWWA C151 and shall be mortar lined, push-on joint, or mechanical joint. The ductile iron pipe shall be Class 50. Joints for ductile iron pipe shall be rubber gasketed, conforming to the requirements of ANSI A 21.11 or AWWA C111.

B. Gravity Structures

Precast manholes will meet the requirements of ASTM C478. Manholes will be Type 1- 48 inches unless otherwise specified on the plans. Joints will be rubber gasketed, conforming to ASTM C443 and will be grouted from the inside. Lift holes will be grouted from the outside and inside of the manhole. The minimum manhole frame opening will be 24 inches. Joints will be rubber gasketed conforming to ASTM C 443 and will be grouted from the inside.

C. Gravity Sewer Lateral

Side sewer services will be PVC, ASTM D 3034 SDR 35 with flexible gasketed joints. Side sewer connections will be made by a tap to an existing main or a wye branch from a new main connected above the springline of the pipe. Side sewer services will be installed according to applicable standard detail(s).

D. Pressure Sewer Lines

Force mains to 12 inches will be ductile iron AWWA C151 Class 50 or PVC C900 with ductile iron fittings and gasketed joints. All ductile iron pipe and fittings will be epoxy coated or PE lined and designed for use with corrosive materials.

1. Force Mains

The minimum pipe size used is 2 inches nominal diameter. This is based on maintenance requirements rather than flow. Pipe will be PVC, ASTM D2241, SDR 21 (200) with rubber gasketed joints. Gaskets will comply with ASTM D 1869. STEP mains will have a minimum 36 inches of cover to top of pipe. See Section 6.3.3.G for sanitary sewer/water main crossing requirements.

2. Service line.

Service connection pipe will be minimum 1-inch diameter, Schedule 80 PVC water pipe, solvent weld joint located at 90 degrees to the main line when possible. Solvent cements and primer for joining PVC pipe and fittings will comply with ASTM D 2564 and will be used as recommended by the pipe and fitting manufacturers.

Services will have a minimum 24 inches cover to top of pipe.

Pressure services crossing over any waterline 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 International Plumbing Code as adopted by the City. The owner will be responsible for maintenance of the building sewer.

4. Fittings

All pipe fittings will have a minimum working pressure rating equal to 200 psi. Fittings will be PVC 1120, rubber joint complying with ASTM D-1784, D-2466, or D-2467 for pipe larger than 1 inch. Solvent weld fittings for 1-inch pipe will be socket-type Schedule 40 and will comply with ASTM D-1784 and ASTM D-2466.

7.3.2 Construction Requirements

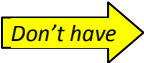
Sewer mains and appurtenances shall be constructed per WSDOT/APWA Standard Specifications:

| | |
|--|----------------|
| Manholes, Inlets, Catch Basins, and Dry Wells..... | Section 7-05.3 |
| General Pipe Installation Requirements..... | Section 7-08.3 |
| Water Mains..... | Section 7-09.3 |
| Valves for Water Mains | Section 7-12.3 |
| Sanitary Sewers..... | Section 7-17.3 |
| Side Sewers | Section 7-18.3 |
| Sewer Cleanouts..... | Section 7-19.3 |

LIST OF STANDARD DETAILS

CHAPTER 7 – SANITARY SEWER

| | |
|--|---------------|
| Manhole - Typical | SS-Typ-MH |
| Manhole - Plan | SS-MH-Pln |
| Manhole - Frame and Cover | SS-MH-F/C |
| Manhole - Steps and Ladder | SS-MH-Lddr |
| Manhole - Frame Collar | SS-MH-Cllr |
| Manhole - Saddle | SS-Sddl-MH |
| Manhole - Shallow | SS-MH-Shllw |
| Manhole - Inside Drop | SS-MH-Inside |
| Manhole - Outside Drop | SS-MH-Outside |
| Manhole - Force Main Discharge | SS-FM-MH |
| Trench Section - PVC Pipe | SS-Trnch-PVC |
| Trench Section – Ductile Iron Pipe | SS-DIP-Trnch |
| Trench Section - Pressure Line and Force Main | SS-Trnch-FM |
| Side Sewer - Single | SS-SS-Sngl |
| Side Sewer - Dual | SS-Dual-SS |
| Side Sewer – At Ditch | SS-Dtch-SS |
| Side Sewer - Existing Street | SS-SS-EXst-St |
| Side Sewer - Private | SS-PSSst-R |
| Side Sewer - Deep | SS-SS-Deep |
| Air and Vacuum Release Assembly | SS-AVRVA |
| Manhole or Catch Basin (Type II) Grade Adjustment | SD-CB-Adj |
| Grease Interceptor | SS-Grs-Int |
| Typical Grinder Pump Installation | PS-1A |
| Residential Grinder Pump Assembly Notes | PS-1B |
| Grinder Service to Gravity Main Connection | PS-2 |
| Typical Grinder Sewer Air Release Valve | PS-3 |
| 1,000 Gallon STEP Tank | PS-4A |
| 1,500, 3,000, 4,500 Gallon STEP Tank/Pump Tank | PS-4B |
| Typical Simplex STEP Tank Installation | PS-5 |
| Typical SDG Tank Installation | PS-6 |
| Typical STEP/SDG Tank Riser | PS-7A |
| Typical Traffic Bearing STEP/SDG Tank Lid | PS-7B |
| Typical Pressure Sewer Connection | PS-8 |
| Typical STEP/SDG Sewer Air Release Valve | PS-9 |
| Typical Force Main Line Gate Valve | PS-10 |
| Pressure Sewer CO/2”-4” Pig Launcher | PS-11 |
| Pressure Sewer Pig Port Detail (6” Dia. and Above) | PS-12 |
| Pressure Main Cleanout (6” Dia. and Above) | PS-12B |
| Pressure Sewer Pig Launcher | PS-13 |
| Remote Post – Residential Control Panel Installation | PS-14 |
| Typical Control Panel Installation on Existing House | PS-15 |
| Typical Flushing Connection | PS-16 |



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ILLUMINATION

8.1 GENERAL

The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of illumination facilities. Greater or lesser requirements may be mandated by the City due to localized conditions.

8.2 DESIGN STANDARDS

Except as supplemented by these standards, the illumination systems shall be designed and installed in accordance with the latest edition of the following documents (including all amendments and revisions thereto):

- *Standard Specifications for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Specifications”).
- *Standard Plans for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Plans”).
- *Design Manual* as published by Washington State Department of Transportation (referred to as the “Design Manual”).
- *American National Standard for Roadway Lighting* (RP-8) as published by the Illuminating Engineering Society.
- Applicable requirements of the Washington State Department of Labor and Industries.
- Applicable requirements of Puget Sound Energy.

These standards shall apply to all developments except isolated developments where the new roadway length from the intersection of an existing roadway to the end of the new roadway or end of the new cul-de-sac is less than 250', or where only one or two lights are required, as determined by the Public Works Department. Where only one or two lights are required, the Public Works Department shall determine the specific requirements based on existing conditions. If new roadways less than 250' in length are a part of a larger development, however, then these standards shall also apply.

8.2.1 Project Plans

Copies of the final site plan shall be submitted by the developer to IntoLight (355 110th Avenue NE, PO Box 90868, EST 9W, Bellevue, WA 98009-0868, (425) 456-2496) to prepare the design of street lighting. Provide AutoCAD format drawings at the request of IntoLight. The IntoLight plans will be submitted to the CITY for review and approval.

8.2.2 Installation Requirements

Street lighted shall be constructed per the approved IntoLight design by an IntoLight and City approved contractor.

8.2.3 Foundations

All streetlight standards shall be installed on reinforced cement concrete foundations per Standard Plan J-28.30-02. Minimum foundation depths shall be as follows unless a soils investigation indicates that greater depths are necessary.

- Post Top Mount Poles: 4 feet
- Mast Arm Poles Up to 30 Feet in Height: 5 feet
- Mast Arm Poles 30 to 40 Feet in Height: 6 feet

All foundations shall be a minimum 3 feet in diameter. Direct bury poles shall not be allowed.

Foundations shall be installed in undisturbed soil.

Where standards are located more than 5 feet from a sidewalk or curb, the top of the foundation shall be finished with a 3-foot square, 4-inch thick cement concrete cap set flush with the adjacent ground. Where the standard is nearer than 5 feet to a sidewalk and/or curb, the foundation cap shall be 3 feet wide and shall abut and be flush with the sidewalk and/or curb.

All foundations shall be constructed in a single pour. Where the foundation is located in a sidewalk area, the sidewalk shall be constructed in a separate pour. Where the foundation is not located in the sidewalk area, the foundation cap may be installed in a separate pour.

Foundations for service cabinets shall consist of a 4-inch thick cement concrete pad incorporating a cement concrete pedestal approximately 12 inches in height. Pedestal dimensions shall be cabinet dimensions plus 2 inches on each side. Pad dimensions shall be pedestal dimensions plus 18 inches on each side.

The cement concrete pad for the service cabinet shall be installed on 4 inches of compacted crushed surfacing top course.

Where possible, the cabinet foundation pad shall abut the back of the sidewalk and be separated from the sidewalk with a construction joint.

8.2.4 Junction Boxes

A junction box shall be installed adjacent to each luminaire pole for the purpose of splicing the primary streetlight circuit. Boxes shall also be installed at all other locations where primary streetlight circuit splices are made.

Splicing of primary streetlight circuits in pole bases shall not be allowed, except for the splice to the individual light on that pole.

Where possible, the junction box shall be installed in the sidewalk or in the foundation cap noted in Section 8.2.3 of these Standards. Junction boxes shall not be located within the roadway, driveways, or pedestrian ramps, including the transition areas.

8.2.5 Conduit

Each conduit run shall contain a 200-pound breaking strength polyolefin pull cord, which shall be tied off at both ends.

All conduit installed underground shall have polyethylene Underground Hazard Marking Tape, 6 inches wide, red, legend "Caution-Electric Line Buried Below," placed approximately 12 inches above the conduit.

Minimum size conduit for streetlight systems shall be as follows:

- Main Line Under Roadways: 2 inches
- Main Line Not Under Roadway: 1-1/2 inches
- Into Pole Base from Adjacent Junction Box: 1-1/4 inches

Conduit carrying unfused circuits, conduit placed above ground, and conduit crossing beneath roadways shall be rigid galvanized steel.

Conduit containing fused circuits at all other locations may be rigid Schedule 40 PVC.

8.2.6 Light Standards

The following mounting heights shall be maintained for the various roadway classifications:

- Local Access: 25 feet
- Collector: 30 feet
- Minor Arterial: 30 to 35 feet
- Major Arterial: 35 to 40 feet

The luminaire arm shall provide a curb overhand of 2 to 5 feet. Where standards are located at varying distances from the edge of the roadway, the luminaire arm length shall be adjusted to provide the same curb overhang along the roadway.

The area between the base plate and the surface of the sidewalk or pad shall be grouted.

8.2.7 Service

Service for the streetlight system shall be provided from a service cabinet incorporating a single photoelectric cell to energize all luminaires.

The service shall be located at the back of sidewalk, where possible, with the door opening toward the sidewalk.

8.3 MATERIALS AND METHODS

8.3.1 General

Illumination workmanship and materials will be in accordance the most current copy of the WSDOT/APWA Standard Specifications and according to the recommendations of the manufacturer of the materials.

Note: To be added after information provided by IntoLight.

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LANDSCAPING

9.1 GENERAL

The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of facility landscaping. Greater or lesser requirements may be mandated by the City due to localized conditions.

Landscaping shall be provided where required by *Pacific Municipal Code* 20.70 and as designated by the City Planning Department. Landscaping items shall be furnished and installed as directed and approved by the Public Works Department. Irrigation will likely be required, and if so, shall be designed, furnished, and installed by the developer.

9.2 DESIGN STANDARDS

Except as supplemented by these standards, the landscaping systems shall be designed and installed in accordance with the latest edition of the following documents (including all amendments and revisions thereto):

- *Standard Specifications for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Specifications”).
- *Standard Plans for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Plans”).

9.2.1 Project Plans

Plans shall be submitted for the CITY’S review which provide the locations, size, quantity, and type of the proposed landscaping components. Project plans shall contain the following:

- A. A horizontal scale of not more than 1 inch = 50 feet.
- B. A north arrow and scale bar.
- C. Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); contours extending at least 50 feet beyond property lines; existing utility pipes with size and material; and appurtenances.
- D. Locations and type of all proposed features, above and below ground, including:
 - Fencing - location(s), type, gate(s), quantity, and relevant Detail reference(s)
 - Parking – location(s), quantities with calculations, handicap parking, semi-truck turn around, etc.

- Trees - location(s), caliper, variety, quantity, and relevant Detail reference(s)
- Shrubs – location(s), variety, quantity, and relevant Detail reference(s)
- Ground Covers – location(s), variety, quantity, and relevant Detail reference(s)
- Irrigation System – location(s), water meter, backflow prevention assembly, pressure reduction devices, valves, sprinkler heads, zones, and relevant Detail reference(s)

E. A copy of the City Standard Landscaping Notes shall be included.

LANDSCAPING NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. All landscaping improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, landscape designer, and appropriate public agencies.
4. All trees adjacent to public rights-of-way and sidewalks shall have root barriers per detail ____.
5. All plant materials shall conform in size and grade to “American Standard for Nursery Stock”, current edition, and shall be installed and maintained per specifications.
6. Plant material quantities and sizes will be inspected for compliance with approved plans and the landscape designer shall send the City a letter certifying construction of the landscaping prior to the release of the Performance Bonds.
7. Landscaping will be installed and maintained so as not to interfere with sight distance needs of drivers in the parking area and at the entrance/exit locations.
8. The owner is responsible for maintaining shrubs and trees that are required per approved landscaping plans. Dying or dead plant materials are to be replaced during the next planting season.
9. Plant materials shall have all strings or ropes at the base of the plant cut away from the trunk (including biodegradable brands of rope).
10. All root balls removed from containers shall be scarified prior to backfilling.
11. Planting hole to be 2-1/2 times the diameter of the plant container and depth to be 1 inch shallower than root ball excluding adventitious roots.

12. All shrubs shall be set back 3 feet away from edge of walks, walls, and other hardscape features. Groundcover shall be planted 1 foot from the same features.

9.2.2 Plantings

The minimum planting requirements are presented in *Pacific Municipal Code* 20.70.

Landscape areas shall be 65 percent covered with vegetative material: trees, shrubs, ground covers, and or grasses. Bark, mulches, gravels, and other non-vegetative materials shall not cover more than 35 percent of the landscaping area.

Landscaping areas shall be provided with adequate drainage. Irrigation of landscaping areas may be required.

Other tree species or their varieties may be planted as street trees, with approval of the City Planners, if they are appropriate for the planting location and are generally free of health problems or other limitations.

Some planting locations may require a specific species to ensure consistency with citywide streetscape designs. Only the designated species or variety shall be planted in these areas, unless otherwise authorized by the City Planners.

9.2.3 Fencing

Gates crossing driveways for non-residential sites shall be located a minimum of 35 feet from the curb line. The location shall be adequate to allow complete departure from the traveled way of a stopped vehicle for the purposes of opening the gate.

Fencing with razor wire or barb wire will be located 2 feet minimum behind the front property line.

To maintain visibility, no fence greater than 36-inches in height shall be located within a triangular area at street and/or alley intersections measuring 10 feet on each side of the traffic area.

9.2.4 Parking

The minimum parking requirements are detailed in *Pacific Municipal Code* 20.72.

9.3 MATERIALS AND METHODS

9.3.1 General

Landscaping workmanship and materials will be in accordance with the *Pacific Development Standards (PDS)*, the most current copy of the WSDOT/APWA Standard Specifications, and according to the recommendations of the manufacturer of the materials.

9.3.2 Materials

Landscaping elements shall meet the requirements of WSDOT/APWA Standard Specifications:

| | |
|----------------------------|----------------|
| Roadside Restoration | Section 8-02.2 |
| Irrigation Systems | Section 8-03.2 |

| | |
|---|----------------|
| Chain Link Fence and Wire Fence..... | Section 8-12.2 |
| Mailbox Support | Section 8-18.2 |
| Permanent Signing..... | Section 8-21.2 |
| Rock and Gravity Block Wall and Gabion Cribbing | Section 8-24.2 |

A. Planting Stock Requirements

Size. Unless otherwise specified by the City Planners, all tree planting stock shall conform to American Standards for Nursery Stock (ANSI Z60.1-1990) and shall be at least 1-3/4-inch caliper.

Grade. Unless otherwise specified by the City Planners, all trees shall have comparatively straight trunks, well developed leaders and crowns, shall exhibit evidence of proper nursery pruning practices, and shall have a branch height of at least 6 feet. At the time of planting, all trees must be free of mechanical injuries and other objectionable features that affect the future form and beauty of the plant.

9.3.3 Construction Requirements

Landscaping elements shall be constructed per WSDOT/APWA Standard Specifications:

| | |
|---|----------------|
| Roadside Restoration | Section 8-02.3 |
| Irrigation Systems | Section 8-03.3 |
| Chain Link Fence and Wire Fence..... | Section 8-12.3 |
| Mailbox Support | Section 8-18.3 |
| Permanent Signing..... | Section 8-21.3 |
| Rock and Gravity Block Wall and Gabion Cribbing | Section 8-24.3 |

LIST OF STANDARD DETAILS

CHAPTER 9 – LANDSCAPING

| | |
|--|----------------|
| Swing Gate and Fence | LS-Gt-Fnc |
| Rock Wall | LS-Rck-Wll |
| Mailbox Detail | LS-Mlbn |
| Removable Bollard | LS-Rmvbl-Bllrd |
| School Bus Stop Shelter..... | LS-BS-Shltr |
| Don't have → Ball and Burlap Planting Detail | ? |
| Rooted Cutting / Offset / Seedling Detail | ? |
| Bare Root / Can Stock Planting Details | ? |
| Wetland Sign..... | LS-Wtlnd Sgn |

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STREET TREES

10.1 GENERAL

The standards established by this chapter are intended to represent the **minimum** standards for the implementation of Street Trees. Greater or lesser requirements may be mandated by the City due to localized conditions.

Street Trees shall be provided where required by *Pacific Municipal Code 20.70* and as designated by the City Planning Department. Landscaping items shall be furnished and installed as directed and approved by the Public Works Department. Irrigation will likely be required, and if so, shall be designed, furnished, and installed by the developer.

10.2 DESIGN STANDARDS

Street Trees shall be selected for their verticality and high open canopies in front of commercial and retail locations. Generally, trees should have a minimum branching height of seven feet. City Planners may vary these standards for different site conditions but should prioritize site distance issues and public health and safety over aesthetic concerns.

Project Plan Review - See section 9.2 for additional design standards and requirements for Street Tree plan submission.

10.3 MATERIALS AND METHODS

A. Tree Sizing and Location

Generally, all large trees, at maturity, shall be spaced 30 to 50 feet, center to center; all medium trees shall be spaced 25 feet, center to center; and all small trees shall be spaced 20 feet center to center. The City Planners may vary the following standards as necessary to ensure public safety and consistent streetscape design. Spacing and location of trees shall be determined by the City Planners in accordance with local conditions; the species, cultivators, or varieties used; and their mature height, spread, and form.

In planting locations less than 5 feet wide, or where overhead lines or building setbacks present a special problem, the City may vary these requirements or make site-specific recommendations to allow for the planting of trees where deemed appropriate.

Trees shall be planted to the following standards:

- At least 15 feet from driveways and alleys
- 30 feet from street intersections.
- Minimum 3-1/2 feet from face of curb
- Minimum 5 feet from underground utility lines

- No tree shall be planted closer than 20 feet to a utility pole or a streetlight to allow for maintenance and light penetration.
- Branching Height: Street Trees planted greater than 3.5-inch caliper shall have a minimum branching height of 7 feet 0 inches. If a street tree is planted less than 3.5-inch caliper and does not have an established branching height above 7 feet 0 inches, City Planners shall have an Arborist monitor the growth of the street tree, and have Arborist make recommendations to the City as to the appropriate time to limb up the Street Tree to 7 feet 0 inches, based on public welfare and safety as well as aesthetics and tree health.

B. Tree Varieties

The City Planners have provided the following list of trees appropriate for planting as street trees. Tree species on this list have been divided into five categories that relate to designated zoning areas around the City of Pacific (see zoning map below or <http://cityofpacific.com/forms/ZoningMap.pdf>). Within these five categories, trees have been further divided based on tree size as they relate to planting conditions:

- Medium to Large Trees – Canopy height greater than 35 feet. Not appropriate under wires, approved for planting strips larger than 5-foot by 5-foot.
- Medium Trees – Canopy height greater than 25 feet and less than 35 feet. Appropriate under high power lines, approved for 5-foot by 5-foot planting strips.
- Small Trees – Canopy height less than 25 feet. Appropriate for under lower power lines and for sites with limited vertical space.

City of Pacific Street Tree Guidelines per Zoning

Commercial/Highway Commercial Zones: Trees to have open/narrow canopies to allow commercial signage to be seen. Trees to be urban tolerant. Use Medium to Small tree category for trees located under power lines.

Large Trees

| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
|---------------------------------------|------------------------------|---------------------|--------|---------------|----------|
| Acer freemanii 'Celebration' | Celebration Maple | 40x20 | | yellow-orange | |
| Betula jacquemontii | Jacquemontii Birch | 40x30 | | yellow | |
| Ginkgo biloba 'Princeton Sentry' | Princeton Sentry Ginkgo | 40x15 | | yellow | |
| Gleditsia tricanthos 'Shademaster' | Shademaster Honey Locust | 45x35 | | yellow | |
| Liriodendron tulipifera 'Fastigiatum' | Columnar Tulip Poplar | 50x15 | yellow | yellow | |
| Sophora japonica 'Regent' | Japanese Pagoda Tree | 50x50 | yellow | n/a | |
| Tillia cordata 'Corzam' | Columnar Littleleafed Linden | 45x15 | yellow | yellow | |

Medium to Small Trees

| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
|----------------------------------|--------------------|---------------------|--------|------------|----------|
| Oxydendron arboreum | Sourwood | 35x12 | | red | |
| Cercis canadensis | Eastern Redbud | 20x25 | pink | yellow | |
| Syringa reticulata 'Summer Snow' | Japanese Silk Tree | 20x15 | white | n/a | |

Light Industrial: Trees to have large, high canopies to accommodate industrial uses. Trees to be urban tolerant. Use Medium to Small tree category for trees located under power lines.

Large to Medium Trees

| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
|---------------------------------------|--------------------------|---------------------|--------|--------------|----------|
| Ginkgo biloba 'Autumn Gold' | Autumn Gold Ginkgo | 40x35 | | yellow | |
| Gleditsia tricanthos 'Shademaster' | Shademaster Honey Locust | 45x35 | | yellow | |
| Liquidambar styraciflua 'Rotundiloba' | Sweetgum | 60x40 | | red-orange | |
| Liriodendron tulipifera | Tulip Poplar | 50x15 | yellow | yellow | |
| Quercus paulistis | Pin Oak | 75x40 | | red-burgundy | |
| Quercus phellos | Willow Oak | 75x40 | | red-orange | |

Medium to Small Trees

| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
|----------------------------------|--------------------|---------------------|--------|------------|----------|
| Oxydendron arboreum | Sourwood | 35x12 | | red | |
| Cercis canadensis | Eastern Redbud | 20x25 | pink | yellow | |
| Syringa reticulata 'Summer Snow' | Japanese Silk Tree | 20x15 | white | n/a | |

Office Park/ Neighborhood Business: Medium - Small Trees with human scale and urban tolerance. Use small trees under power lines and in

Medium to Small Trees

| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
|--------------------------------------|-------------------------------|---------------------|--------------|--------------|----------|
| Crataegus lavalii | Lavalle Hawthorne | 30x20 | white | red | |
| Koeleruteria paniculata | Goldenrain Tree | 30x30 | yellow | n/a | |
| Oxydendron arboreum | Sourwood | 35x12 | | red | |
| Prunus cerasifera 'Krauter Vesuvius' | Flowering Plum | 30x20 | pink | n/a | |
| Pyrus calleryana 'Chanticleer' | Chanticleer Flowering Pear | 30x15 | white | red-burgundy | |
| Sophora japonica 'Columnaris' | Columnar Japanese Pagoda Tree | 30x15 | yellow | n/a | |
| Sorbus aucuparia 'Fastigiata' | Columnar Mountain Ash | 30x12 | yellow/white | red | |
| Tillia cordata 'Corzam' | Columnar Littleleafed Linden | 45x15 | yellow | yellow | |

Small Trees

| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
|---|--------------------------------|---------------------|---------|------------|----------|
| Acer ginnala 'Flame' single trunk only | Amur Maple - single trunk only | 15-20x20 | yellow- | red | |
| Acer griseum | Paperbark Maple | 25x15 | | red | |
| Amelanchier grandiflora 'Autumn Brilliance' | Serviceberry | 20x15 | white | red | |
| Cercis canadensis | Eastern Redbud | 20x25 | pink | yellow | |
| Syringa reticulata 'Summer Snow' | Japanese Silk Tree | 20x15 | white | n/a | |

Low-Density Residential: Large shade trees for more open sites. Use small trees under power lines and in planting strips under 5'-0".

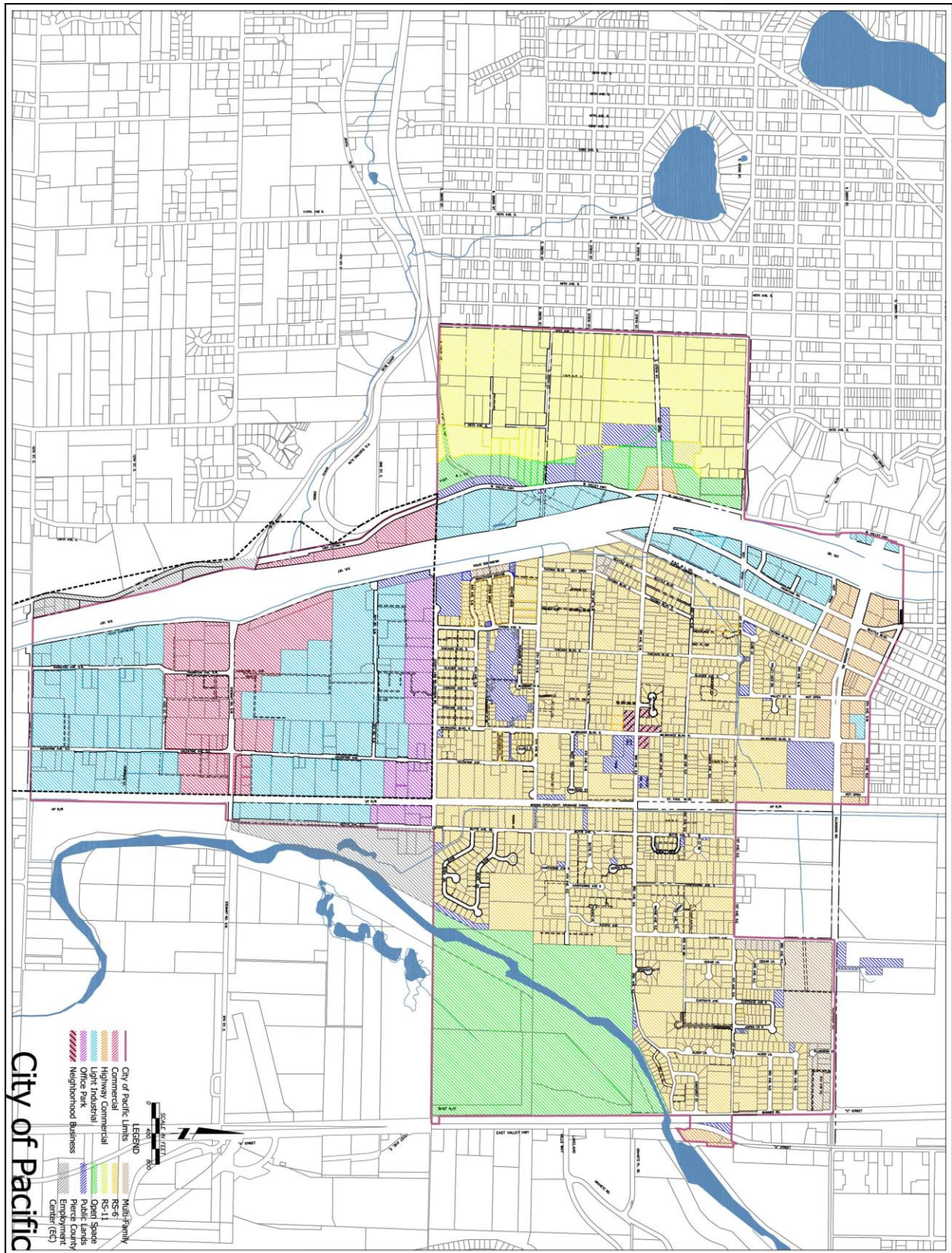
| Large to Medium Trees | | | | | |
|--|-----------------------|---------------------|------------------|--------------|----------|
| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
| <i>Aesculus carnea</i> 'Briotii' | Red Horsechestnut | 30x35 | 10" red panicles | n/a | |
| <i>Cercidiphyllum japonicum</i> | Katsura | 40x20 | | yellow | |
| <i>Fraxinus americana</i> 'Urbanite' | Urbanite Ash | 45x35 | white | yellow | |
| <i>Liquidambar styraciflua</i> 'Rotundiloba' | Sweetgum | 60x40 | | red-orange | |
| <i>Nothofagus antarctica</i> | Southern Beech | 50x35 | | | |
| <i>Quercus</i> 'Crimschmidt' | Crimson Spire Maple | 45x15 | | red | |
| <i>Quercus lasiocarpa</i> | Sawtooth Oak | 75x40 | | red | |
| <i>Quercus robur</i> 'Skyrocket' | Skyrocket English Oak | 50x15' | | red | |
| <i>Quercus macrocarpa</i> | Bur Oak | 75x40 | | yellow | |
| <i>Quercus paulstris</i> | Pin Oak | 75x40 | | red-burgundy | |
| <i>Tillia cordata</i> | Littleleafed Linden | 50x30 | | yellow | |
| <i>Quercus phellos</i> | Willow Oak | 75x40 | | red-orange | |

| Small Trees | | | | | |
|--|---------------------|---------------------|--------|------------|----------|
| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
| <i>Acer griseum</i> | Paperbark Maple | 25x15 | | red | |
| <i>Amelanchier grandiflora</i> 'Autumn Brilliance' | Serviceberry | 20x15 | white | red | |
| <i>Cercis canadensis</i> | Eastern Redbud | 20x25 | pink | yellow | |
| <i>Magnolia grandiflora</i> 'Little Gem' | Little Gem Magnolia | 15x10 | white | evergreen | |

Multi-Family Residential: Medium to Small narrow canopied trees. Trees to be urban tolerant. Use Medium to Small tree category for trees located under power lines.

| Medium to Small Trees | | | | | |
|--|------------------------------|---------------------|--------------|--------------|----------|
| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
| <i>Crataegus lavalii</i> | Lavalle Hawthorne | 30x20 | white | red | |
| <i>Liriodendron tulipifera</i> 'Fastigiatum' | Columnar Tulip Poplar | 50x15 | yellow | yellow | |
| <i>Magnolia grandiflora</i> 'Victory' | Victory Magnolia | 25x20 | white | evergreen | |
| <i>Prunus cerasifera</i> 'Kräuter Vesuvius' | Flowering Plum | 30x20 | pink | n/a | |
| <i>Pyrus calleryana</i> 'Chanticleer' | Chanticleer Flowering Pear | 30x15 | white | red-burgundy | |
| <i>Sorbus aucuparia</i> 'Fastigiata' | Columnar Mountain Ash | 30x12 | yellow/white | red | |
| <i>Tillia cordata</i> 'Corzam' | Columnar Littleleafed Linden | 45x15 | yellow | yellow | |

| Small Trees | | | | | |
|---|--------------------------------|---------------------|-----------------|------------|----------|
| Scientific Name | Common Name | Height & Width (FT) | Flower | Fall Color | Comments |
| <i>Acer ginnala</i> 'Flame' single trunk only | Amur Maple - single trunk only | 15-20x20 | yellow-fragrant | red | |
| <i>Acer griseum</i> | Paperbark Maple | 25x15 | | red | |
| <i>Acer palmatum</i> | Japanese Maple | 20x25 | red | yellow-red | |
| <i>Cercis canadensis</i> | Eastern Redbud | 20x25 | pink | yellow | |
| <i>Magnolia gradiflora</i> 'Little Gem' | Little Gem Magnolia | 15x10 | white | evergreen | |
| <i>Parrotia persica</i> 'Vanessa' | Columnar Persian Parrotia | 25x15 | | orange | |
| <i>Syringa reticulata</i> 'Summer Snow' | Japanese Silk Tree | 20x15 | white | n/a | |



C. Construction and Planting Stock Requirements

Refer to section 9.3 for additional Street Tree requirements and specification guidelines.

D. Utilities

Before installation of street tree confirm the location of any utilities: water, electric, gas lines with City Planning. Knowing these locations in advance may save you time and money by preventing an accident from occurring during construction.

LIST OF STANDARD DETAILS
CHAPTER 10 – STREET TREES

| | |
|--|-----------|
| Street Tree - Planting and Staking | LS-Tree |
| Street Tree - Root Guard..... | LS-Rt Grd |

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FRANCHISE UTILITIES

11.1 GENERAL

The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of franchise utilities. Greater or lesser requirements may be mandated by the City due to localized conditions. The following design and construction considerations shall apply.

All residences and businesses shall have solid waste collection service. Solid waste is defined as all waste and discarded materials, including rubbish and debris, waste, discarded food, animal and vegetable matter, wastepaper, cans, glass, ashes, offal, and boxes.

The following table provides a list of the purveyors of franchise utilities in the City of Pacific.

| Franchise Utility Service | Name of Purveyor |
|---|------------------------------|
| Cable Television | Comcast |
| Electricity (Power) | Puget Sound Energy |
| Natural Gas | Puget Sound Energy |
| Solid Waste – King County – Pierce County | Waste Management Murray's |
| Telephone | Quest/Century Link |

11.2 DESIGN STANDARDS

Except as supplemented by these standards, the franchise utility systems shall be designed and installed in accordance with the latest edition of the following documents (including all amendments and revisions thereto):

- *Standard Specifications for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Specifications”).
- *Standard Plans for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Plans”).

11.2.1 Project Plans

Detailed plans shall be submitted for the City's review which provide the locations, size, and type of the proposed franchise utility system and points of connection. Project plans shall contain the following:

- A. A horizontal scale of not more than 1 inch = 50 feet.

- B. A north arrow and scale bar.
- C. Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); contours extending at least 50 feet beyond property lines; existing utility pipes with size and material; and appurtenances.
- D. Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines.
 - 1. Utility Conduits and Cables - location(s), diameter, material, and relevant Detail reference(s)
 - 2. Structure(s) – structure number, location(s), type and/or size, top elevation, necessary appurtenances, and relevant Detail reference(s)
 - 3. Other appurtenances with relevant Details reference(s)
- E. A copy of the City Standard Franchise Utility Notes shall be included.

FRANCHISE UTILITY NOTES

- 1. See the City of Pacific Standard Notes on Sheet ____.
- 2. See the Construction Sequence on Sheet ____.
- 3. All franchise utility improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, engineer, and appropriate public agencies.

11.2.2 Telecommunication Conduits and Cables

Conduits and cables shall meet the following criteria.

- A. Conduits and cables shall be constructed in dedicated streets or easements. Easements to be dedicated to the City will have a minimum width of 10 feet.
- B. All utility lines, including electric, telephone, fire alarm, and television cables, shall be placed underground prior to paving.
- C. Lines shall be sized to provide for current and future requirements.
- D. Conduits and cables shall be installed to the farthest property line(s) of the area being served.
- E. All lines shall have a minimum of 24 inches of cover.
- F. Service lines (suitable empty conduits placed and capped) for cable television shall be installed underground (location as approved by Public Works Director) on all subdivisions regardless of whether or not cable television service is currently available.
- G. All services will be placed underground from the primary system to the building and/or meter unless undergrounding is determined by the

Building Official to be impractical due to the layout and proximity of the primary system.

11.2.3 Undergrounding of Utilities

A. New Development

The developer will provide for relocation of any utilities that must be relocated to accommodate street or other required improvements. Existing overhead power (less than 55 KV) and communications utilities located on the property or along the abutting street or alley frontages will be converted and relocated underground.

Exemptions:

- Where the length of the affected utility system is less than 250 feet, undergrounding conduit will be installed in lieu of full undergrounding. A deferral for completion of the undergrounding will be authorized pursuant to these Development Standards.
- Where the length of the affected utility system is less than 250 feet and where there are street-side improvements conforming to City standards presently in place along the frontage where the overhead utility is located, a deferral for undergrounding will be authorized pursuant to these Development Standards.
- Where the length of the affected utility system is less than 250 feet and where the serving utility has determined that installation of conduit would not be consistent with long-range utility undergrounding plans, a deferral for undergrounding will be authorized pursuant to these Development Standards.
- The remodeling and expansion of existing buildings will be exempt from utility undergrounding requirements unless other street and sidewalk improvements are required to be installed along the frontage where the overhead utility is located. For these exemptions, a deferral for undergrounding will be authorized pursuant to these Development Standards.

Whenever any new or existing electric utilities, cable facilities, or telecommunications facilities are located or relocated underground within a public way of the City, a franchisee, lessee, or applicant currently occupying the same public way shall relocate its facilities underground at no expense to the City. Absent extraordinary circumstances or undue hardship, as determined by the City Community Development and Public Works Director, such relocation shall be made concurrently to minimize the disruption of the public ways. No extension granted by the Public Works Director under this subsection shall exceed a period of 12 months.

The following overhead facilities are exempt from these undergrounding requirements:

- Utility substations, pedestals, pad-mounted transformers and switching stations, and similar appurtenances.
- Electric transmission systems with a voltage of 55 KV or more.
- Temporary services for construction.

- Police and fire sirens or similar municipal equipment, including traffic control equipment.

B. Utility Coordination with City

Each July, at the request of the City, a representative of the franchisee, lessee, or applicant shall meet with a representative of the City and provide the City construction and installation plans for facilities preliminarily planned for the ensuing year.

The City understands that such plans are highly confidential and proprietary documents, the possession of which by the franchisee, lessee, or applicant's competitors could irreparably harm the franchisee, lessee, or applicant. Accordingly, the City shall treat such plans as confidential documents and shall maintain and assert at all times all protections available to avoid the disclosure of such documents under local, state, and federal law.

All new primary line extensions will be placed underground. With input from franchisees, lessees, or other utility providers, the City shall develop a utility undergrounding plan. The plan shall provide for the undergrounding of all or a portion of aerial utility facilities (located in or required under this ordinance) to be placed in identified corridors within the City on an established schedule.

Each franchisee, lessee, or applicant shall agree to participate in undergrounding its facilities along with other facilities according to the schedule identified in the plan and shall pay its fair share of the cost of undergrounding all such utility facilities in accordance with the plan. If at the time of undergrounding an insufficient number of users exist for undergrounding, as determined in the plan, each franchisee, lessee, or applicant shall at that time underground its own facilities at its own expense pursuant to the plan. At the time the plan is adopted by the City, the franchisee, lessee, or applicant shall execute a bond acceptable to the City Attorney in an amount sufficient to ensure its financial participation in the undergrounding.

In situations within corridors where overhead facilities are at capacity, including that possibly provided by cross bars or extenders, all franchisees, lessees, or applicants for right-of-way use permits shall underground their telecommunications facilities and provide excess underground capacity for future franchisees, lessees, or applicants. The amount of such excess capacity shall be determined by the franchisee, lessee, or applicant consistent with City policy and consistent with federal or state law, and access thereto shall be on a nondiscriminatory basis to future franchisees, lessees, or applicants at a reasonable expense; provided franchisees, lessees, and applicants may reserve the right to set aside a portion of such excess capacity for their sole use so long as a sufficient amount of capacity remains for future franchisees, lessees, or applicants.

At the option of the City, and within 60 days' notice from a franchisee, lessee, or applicant; whenever new conduit is laid, the City shall be provided an opportunity to install one additional 4-inch conduit for City use. The cost to the City shall be limited to the direct incremental costs for materials and labor necessary to add the 4-inch

conduit to the trench. The City's activities shall not unreasonably delay or increase the costs of the franchisee, lessee, or applicant's construction activities.

11.2.4 Solid Waste

These standards provide basic guidelines during planning, design, and construction of refuse/recycling collection sites. These standards include, but are not limited to, design review of new, remodeled, or upgraded collection sites.

Private contractors provide for the collection and disposal of all solid waste generated from all occupied residential and commercial premises within the City a minimum of once every week for residential clients and commercial clients.

Passage to refuse/recycling sites will follow designated traffic patterns and will provide adequate maneuvering area for collection vehicles and containers. Passage routes will be a minimum of 12 feet wide and without obstructions.

For any new, remodeling, or rehabilitation projects, the City will require that the refuse/recycling site be located appropriately to accommodate the use of front-load collection vehicles. Architects or designers shall provide enough turning space at site entrance(s) or exit(s) for the collection vehicle without disrupting local traffic. Minimum vehicle turnaround and maneuvering space is required at all collection locations.

A. Dumpster Pad

Design elements include, but are not limited to, container type and size selection, pad size and slope, drainage issues, site configuration, site enclosure, site location, and collection vehicle passage analysis. The above information will be clearly shown and labeled for refuse/recycling site design review during the approval process. The City of Pacific Public Works Department is responsible for reviewing and approving refuse/recycling site location, site configuration, and site enclosure associated with private and public development. Failure to obtain plan approval prior to construction may require alteration, relocation, or complete reconstruction of the solid waste site enclosure at the customer's expense.

The passage surface to a refuse/recycling pad will be hard surface with a maximum slope of 0.03 ft/ft (3/8 inch per foot).

Refuse/recycling pads will be sloped to provide positive drainage. The slope will not exceed 0.005 ft/ft (1/16 inch per foot) in any direction. The site and pad drainage slope will provide easy passage for collection vehicles and crews. Speed bumps are not permitted within 50 feet of enclosure.

B. Dumpster Enclosures

Site enclosure requirements will be determined on a case-by-case basis, taking into account the planned collection site and surrounding environment. If a site enclosure is required, it will meet the following:

1. Refuse site enclosure will be made of wood, concrete blocks, or chain link fence with horizontal or vertical blinds or other approved material.
2. Refuse site enclosure will require both landscaping and wall or fence at least 6 feet in height on three sides of the refuse site.

3. Refuse site enclosure gate or doors will be wide enough to maneuver the required refuse containers in and out of the site enclosure area without having to realign the container with the access point.
4. Refuse site enclosure gate hinges will be located on the outside of exterior walls. Gates will swing out 180 degrees from the closed position.
5. Refuse site enclosures are to remain free of all other materials that would interfere with collection or the collection vehicle while providing service. Floor will be kept clean and free of grease, oil, and other trip or slip hazards. Dumpster will not be serviced until such situation is remedied.
6. If recycling space is included, additional pad and gate width will be required to meet all of the above criteria.

11.2.5 Grease and Liquid Biological Waste

Grease, manure, offal, or other biological noxious waste materials must have a separate collection container and site from the refuse/recycling site. The waste must be securely wrapped by the customer. This site will be labeled as such. Stored material that generates effluent requires a refuse/recycling site drainage system. This system must be connected to the sanitary sewer system. These refuse/ recycling sites will be covered to prevent stormwater runoff from entering the sanitary sewer system. This coverage shall meet the International Fire Code Section 1103, Combustible Materials.

Under no condition will the refuse/recycling site drainage system be connected to a storm drainage system.

11.3 MATERIALS AND METHODS

11.3.1 General

Franchise Utility workmanship and materials will be in accordance with the *Pacific Development Standards*, the most current copy of the WSDOT/APWA Standard Specifications, the requirements of the franchise utility, and the recommendations of the manufacturer of the materials.

11.3.2 Materials

City of Pacific Standard Specifications are located in Appendix A.

Materials shall meet the following requirements.

A. Solid Waste Pads

The passage surface to a refuse/recycling pad will be hard surface with a maximum slope of 0.03 ft/ft (3/8 inch per foot). The surface and slope will be maintained for a distance greater than the site enclosure or pad depth at the point of access point.

Concrete pads will be constructed with 4-inch thick, Class 3000 cement. Refuse/recycling sites and pads will be sloped to provide positive drainage. The slope will not exceed 0.005 ft/ft (1/16 inch per foot) in any direction. The site and pad drainage slope will provide easy passage for collection vehicles and crews.

11.3.3 Construction Requirements

City of Pacific Standard Details are located following this Section.

Utility construction shall be conducted to reduce the length of open trenches. The trenching and shoring in advance of the utility construction shall not exceed 100 feet unless approved in writing.

A. Trenches in Existing Streets

All utility trenches excavated in the right-of-way shall be backfilled with 5/8-inch crushed rock. The trenches shall then be compacted to 95 percent density in accordance with WSDOT/APWA 7-08.3(3).

B. Street Patching and Restoration

All utility trenches excavated in the right-of-way shall be restored and patched per Chapter 4 Trench Pavement Restoration Detail.

LIST OF STANDARD DETAILS
CHAPTER 11 – FRANCHISE UTILITIES

Not Applicable

FIRE APPARATUS ACCESS ROADS

12.1 GENERAL

The standards established by this chapter are intended to represent the **minimum** standards for the design and construction of illumination facilities. Greater or lesser requirements may be mandated by the City due to localized conditions.

12.2 DESIGN STANDARDS

Except as supplemented by these standards, the illumination systems shall be designed and installed in accordance with the latest edition of the following documents (including all amendments and revisions thereto):

- *Standard Specifications for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Specifications”).
- *Standard Plans for Road, Bridge, and Municipal Construction* as published by Washington State Department of Transportation (referred to as the “WSDOT/APWA Standard Plans”).
- *Design Manual* as published by Washington State Department of Transportation (referred to as the “Design Manual”).
- 2009 International Fire Code
- Valley Regional Fire

Fire service in the City of Pacific is provided by Valley Regional Fire. All requirements of Valley Regional Fire shall be met.

12.2.1 Project Plans

Project plans shall conform to the requirements indicated in Chapter 4 “Transportation” of the *Pacific Development Standards (PDS)*. In addition, the plans shall be approved by the Valley Regional Fire Chief.

12.2.2 Fire Apparatus Access Road Criteria

Conform to requirements indicated in Chapter 4 “Transportation” of the *PDS* and the attached Appendix D “Fire Apparatus Access Roads” of the 2009 International Fire Code, with the following exceptions:

- Roadways leading to cul-de-sacs shall not exceed 300 feet in length.

12.3 MATERIALS AND METHODS

See Chapter 4 “Transportation” of the *Pacific Development Standards (PDS)*.

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GLOSSARY DEFINITIONS

ABUTTING – Having a common boundary.

ACCESS – The safe, adequate, and usable ingress/egress (entrance/exit) to a property or use.

ACTION – A decision made by the review authority(s) on a land use application, including appropriate findings, environmental determination, and conditions of approval, where applicable.

AFFECTED PARTY – Any individual, partnership, corporation, association, or public or private organization of any character significantly affected by or interested in an action before the Review Authority, including any party in a contested case.

ALLEY – A public or private way at the rear or side of property permanently reserved as a means of vehicular or pedestrian access to a property. Functionally, an alley is the minimum or lowest classification of a street.

APPLICANT – Owner(s) or lessee(s) of property, including their agent(s), who submit an application for development. This may also include person(s) who have contracted to purchase property contingent upon acquiring the necessary permits under this Development Code.

APPROVAL AUTHORITY – The Pacific City Council or the Hearing Examiner in those instances where the City Council does not assume jurisdiction.

AASHTO – American Association of State Highway and Transportation Officials.

AVERAGE DAILY TRAFFIC or ADT – The average number of vehicles passing a specified point during a 24-hour period. Annual average daily traffic (AADT) denotes that daily traffic that is averaged over one calendar year.

BEST MANAGEMENT PRACTICES (DRAINAGE) – Physical, structural, or managerial practices that have gained general acceptance for their ability to prevent or reduce public safety impacts and other environmental impacts and that are adopted in the *King County Surface Water Design Manual* (KCSWDM) or approved by the Director.

BEST MANAGEMENT PRACTICES (CRITICAL AREAS) – Management measures that are reasonable and available that mitigate adverse impacts to surface and groundwater and to the functional values of critical areas.

BUILDING SEWER or SIDE SEWER – Will be that portion of the line beginning 2 feet outside the outer foundation wall of the structure to the sanitary sewer main. (Same as “Lateral”)

BOND/SURETY – 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.

CATCH BASIN – A chamber or well, usually installed at the curb line of a street, for the transport of surface water to a sewer or sub-drain, having at its base a sediment sump designed to retain grit and detritus below the point of overflow.

CITY – The City of Pacific, Washington, King/Pierce County, a municipal corporation, existing under and by virtue of the laws of the State of Washington. Actions designated as taken by the City are the acts of the City Council acting through the Mayor.

CITY COUNCIL – The City of Pacific legislative authority.

CITY ENGINEER – The City Engineer for the City of Pacific with authority and duties as designated or his/her authorized designee.

CITY OF PACIFIC DRAINAGE MANUAL – The manual adopted by the Public Works Director – *The King County Surface Water Manual* (KCSWDM) (2009 Edition).

CLEARING – The construction or removal of vegetation from a site by physical, mechanical, chemical, or other means. This does not mean landscape maintenance or pruning consistent with accepted horticultural practices that do not impair the health or survival of trees and vegetation.

CLEAR ZONE – The total street side border area, starting at the edge of traveled way, available for safe use by errant vehicles. The area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area. The desired width is dependent upon the traffic volumes, speeds, and the street side geometry.

COMMUNITY DEVELOPMENT DIRECTOR – The City Community Development Director for the City of Pacific with authority and duties as designated, or his/her designee.

COMPREHENSIVE PLAN – A plan adopted by the City Council to guide the physical growth and improvement of the City and urban growth management area, including any future amendments and revisions.

CONTRACT DOCUMENTS - The contract documents shall consist of the following and in case of conflicting provisions, the first mention shall have precedence:

- A. Developers Agreement
- B. City of Pacific Development Standards and Public Works Standards
- C. Other Applicable City Municipal Codes
- D. City Right-of-Way Use Permit
- E. Plans
- F. Standard Details (WSDOT Specifications)
- G. Specifications - Conditions and Standards of the Contract (as Approved by City)
- H. City Approved Addenda
- I. City Approved Change Orders

CONTROLLED DENSITY FILL – A mixture of Portland cement, fly ash, aggregates, water, and admixtures proportioned to provide a non-segregating, self-consolidating, free-flowing, and excavatable material that will result in a hardened, dense, non-settling fill.

DEDICATION – 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 filing of a final plat, short plat, or 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.

DEVELOPER - The party having an agreement with the City to cause the installation of certain improvements, to become a part of the City's utility and/or roadway system upon completion and acceptance. The term shall also include the Developer's contractor employed to do the work or the Contractor's employees.

DEVELOPMENT – The construction, reconstruction, conversion, structural alteration, relocation, enlargement, or change in use of any structure or property, or any project which will increase vehicle trips per day during peak hour traffic, or any project which negatively impacts the service level, safety, or operational efficiency of serving roads.

EXCLUSIONS –

(1) A one-time enlargement of less than 800 square feet of total footprint on any parcel of property, or, a one-time net increase of less than 25 percent of the total aggregate area of the existing footprint(s) of building(s) on the site, whichever is less.

(2) An individual single-family residence.

DEVELOPMENT PERMIT – Any land use permit that must be approved by the City of Pacific prior to the improvement and development of land or structures.

DEVIATION – A modification of these Standards approved by the Public Works Director.

DIRECTOR – The Director of the City of Pacific Public Works Department, and/or the Director of the Public Works Department or either Director's designee.

DRIVEWAY – A private way for vehicular access to one or more properties, lots, or developments.

EASEMENT – A right of one owner of land to make lawful and beneficial use of the land of another created by an express or implied agreement.

EDGE OF TRAVELED WAY – The face of curb for streets that are, or will be, constructed to urban standards or the outside edge of pavement (not including paved shoulders) for streets that are, or will be, constructed to lesser standards.

ENCROACHMENT – Occupancy of the City right-of-way by non-street structures or other objects.

ENGINEER – See City Engineer.

ERU – The unit used to calculate water and sewer consumption. One Equivalent Residential Unit (ERU) equals 7,500 gallons of water consumed per month. For purposes of these standards, the term ERU will be as follows:

A. Single-family residence, including mobile and manufactured homes: One ERU per living unit.

B. Multi-family residence: One ERU per living unit.

Commercial, industrial, or other customers not readily identified as a residential customer including, but not limited to, hotels, motels, boarding or rooming houses, nursing homes, and transient (overnight) trailer parks are calculated

separately for water and sewer. Water system ERUs are calculated per the Water System ERU Calculation Table. Wastewater ERUs are calculated using the METRO/KING COUNTY Non-Residential Sewer Use Certification worksheet.

Water System ERU Calculation Table

| Use or Classification | ERU Burden | per |
|--------------------------------|------------|---------------|
| Restaurant | 2.0 | 1,000 Sq. Ft. |
| Retail | 0.2 | 1,000 Sq. Ft. |
| Office | 0.5 | 1,000 Sq. Ft. |
| Warehouse | 0.3 | 1,000 Sq. Ft. |
| Church | 2.0 | Each |
| Daycare | 2.0 | Each |
| Auto Service Station | 2.0 | Each |
| School | 3.0 | Classroom |
| Hotel / Motel | 0.5 | Room |
| Recreation Facilities w / Pool | 4.0 | Each |

FIRE LANE – Also fire apparatus access street. Any street or driving surface, whether public or private, that is used to meet the access requirement of the currently adopted edition of the Uniform Fire Code.

FRANCHISE – A document granted by the City authorizing the use of street rights-of-way by public or private entities, subject to specified conditions.

GEOMETRICS – The physical arrangement of the visible elements of a street, such as alignment, grade, curvature, width, and side slopes.

GFC – General Facilities Charge. This fee is collected when new connections are made to the Pacific water system, Pacific sanitary sewer collections system, and stormwater collection system.

GRADE – Rate or percent of change in slope, either ascending or descending from or along the street, measured along the centerline of the street or access point.

GRADING – Any excavating or filling of earth materials or any combination thereof.

HALF STREET – A street constructed along an edge of development utilizing at least half the regular width of the right-of-way and permitted as an interim facility pending construction of the other half of the street by the adjacent owner. A minimum pavement width of 24 feet is required.

HAZARD – A side slope, an object, water, or a drainage device, which if impacted, would apply unacceptable impact forces on the vehicle occupants or place the occupants in a hazardous position. May be either natural or manmade.

IMPERVIOUS SURFACE – Pavement (compacted gravel and concrete), roofs, revetments, or any other man-made surface that substantially impedes the infiltration of precipitation.

IMPROVEMENTS – 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, streetlights, landscape features, sewer and water lines, bridge structures, storm drainage facilities, and traffic control devices as are required to be installed as a part of subdivision, short subdivision, large lot subdivision, binding site plan or commercial development.

INTERCEPTOR – A sewer that receives flow from a number of main or trunk sewers, force mains, etc.

LATERAL – That private portion of the sewer line extending from the City’s main to the building (i.e., the building sewer) that has no other common sewers discharging into it and is operated and maintained by the property owner.

LOCAL IMPROVEMENT DISTRICT (LID) – A public improvement provided to a specific area that benefits that area and that is usually paid for by a special assessment for the benefit of property owners.

MAINTENANCE BOND - A bond furnished by the Developer and written by a corporate body qualified to write surety in the State of Washington, guaranteeing that the Developer will repair any defects found in the work within the time period as further identified herein.

MAYOR – The mayor of the City of Pacific or his/her authorized representative.

MUTCD – The *Manual on Uniform Traffic Control Devices* published by the US Department of Transportation.

PDS – *Pacific Development Standards*.

PMC – *Pacific Municipal Code*.

PAVEMENT – The combination of sub-base, base course, and surfacing materials placed on a sub-grade to support the traffic load and distribute it to the sub-grade.

PEDESTRIAN – Person traveling on foot or in a wheelchair or similar device.

PEDESTRIAN FACILITIES – Infrastructure and equipment to accommodate or encourage walking, including sidewalks, curb ramps, traffic control devices, trails, walkways, crosswalks, paved shoulders, and other design features intended to provide for pedestrian travel.

PERFORMANCE BOND - A bond furnished by the Developer and written by a corporate body qualified to write surety in the State of Washington, guaranteeing that the work will be completed in accordance with the plans and specifications.

PERFORMANCE GUARANTEE – A financial guarantee in a form acceptable to the City Attorney to ensure all improvements, facilities, or work required by this ordinance will be completed in compliance with this ordinance, regulations, and approved plans and specifications.

PERMIT – A document or franchise authorized by the City.

PLAN REVIEWER – The engineering plan reviewer of the Pacific Department of Community Planning and Development.

PLANS – The plans, profiles, cross sections, elevations, details, and supplementary specifications signed by a licensed professional engineer and approved by the Public Works Director that shows the location, character, dimensions, and details of the work to be performed.

PLANTING STRIP – A planter strip in that portion of right-of-way between the curb line and the sidewalk, or between the sidewalk and the right-of-way line, used for the planting of trees, shrubs, groundcover, or grass.

PRIVATE SEWER – Will be that portion of the system located on private property where no easements are granted to the City including gravity laterals, building sewers, and sewer collection systems internal to single parcel developments such as apartment complexes, condominiums, townhouses, shopping centers, commercial office parks, mobile home parks, etc. (see Chapter 7 for more specifics). It also includes the portion of the lateral between the property line and force main. Private sewer systems shall be constructed to City Standards. Maintenance of a private sewer will be the responsibility of the property owner(s).

PRIVATE STREET – Privately owned and maintained access provided for by a tract, easement, or other legal means, typically serving three or more dwelling units.

PROJECT – General term encompassing all phases of the work to be performed and is synonymous to the term “improvement” or “work.”

PUBLIC SEWER – Will be that portion of the system located within rights-of-way or easements (excluding laterals) and is operated and maintained by the City.

PUBLIC STREET – Publicly owned and maintained right-of way.

PUBLIC WORKS DIRECTOR – The Public Works Director for the City of Pacific with authority and duties as designated, or his/her authorized designee.

RECORD DRAWINGS – An approved final revision of a design drawing or plan updated to include information from field inspectors showing the true condition or configuration of what has been built. The drawing or plan is designated “Record Drawing” by stamp or lettering on the drawing and the primary function is to document what was designed and what was actually built, including dimensions, elevations, location, and calculations. Formerly known as as-built or as-constructed drawings.

RESTORATION – All work necessary to replace, repair, or otherwise restore the right-of-way and all features contained within the right-of-way to the same or equivalent condition as before.

REVIEW AUTHORITY – A person, committee, commission, or council responsible for review and final action on a land use or development entitlement or permit.

RIGHT-OF-WAY – All property in which the City has any form of ownership or title and which is held for public street purposes regardless of whether or not any street exists thereon or whether or not it is used, improved, or maintained for public travel.

- A. A strip of land acquired by reservation, dedication, forced dedication, prescription, or condemnation and intended to be occupied by a road, crosswalk, railroad, electric transmission lines, oil or gas pipeline, water line, sanitary storm sewer, street trees, and other similar public accesses or public uses; and
- B. Generally, the right of one to pass over the property of another.

ROAD – Used interchangeably with street.

SANITARY SEWAGE - Sanitary sewerage refers to waste water 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 Metro/King County.

SEWER MAIN or TRUNK – A sewer line that receives flow from one or more mains.

SIDEWALKS – A facility constructed between the curb line, in the lateral line of a street, and adjacent property set aside and intended for pedestrian use, or such portion of private property that parallels and is in proximity to a public street and dedicated for use by pedestrians. Sidewalks are typically constructed of concrete but may be asphalt.

SITE PLAN – The development plan for one or more lots on which is shown the existing and proposed conditions of the lot, including topography, vegetation, drainage, flood plains, walkways; means of ingress and egress; circulation; utility services; structures and buildings; signs and lighting; berms, buffers, and screening devices; surrounding development; and any other information that reasonably may be required in order that an informed decision can be made by the reviewing authority.

SPECIFICATIONS - The directions, provisions, and requirements designated by an Engineer licensed in the State of Washington for the performance of the work and for the quantity and quality of materials, as contained or referenced herein.

STREET – An open public way for the passage of vehicles that, where appropriate, may include pedestrian, equestrian, and bicycle facilities. Limits include the outside edge of sidewalks or curbs and gutters, planter strips, paths, walkways, or side ditches, including the appertaining shoulder and all slopes, ditches, channels, waterways, and other features necessary for proper drainage and structural stability within the right-of-way. The term “street” is used interchangeably with “road.”

STREET, COLLECTOR – A street that distributes and collects traffic within a neighborhood and provides a connection to a major or minor arterial. Neighborhood collectors serve local traffic, provide access to abutting land uses, and do not carry through traffic. Their design is compatible with residential and commercial neighborhood centers.

STREET, CUL-DE-SAC – A street with a single common ingress and egress and with a circular turnaround at the end.

STREET END – The physical termination of the traveled way.

STREET FRONTAGE – The area between any lot lines that intersect or area of a lot that directly abuts the boundary of a public or private street right-of-way.

STREET, MAJOR ARTERIAL – An arterial street provides an efficient, direct route for long-distance travel within the region and different parts of the City. Street-connecting freeway interchanges to commercial concentrations are classified as arterials. Traffic on arterials is given preference at intersections, and some access control may be considered in order to maintain capacity to carry high volumes of traffic.

STREET, MINOR ACCESS – A street that provides access to abutting land uses and serves to carry local traffic to a collector.

STREET, MINOR ARTERIAL – A street that provides connections between the major arterial and concentrations of residential and commercial land uses. The amount of through traffic is less than a major arterial, and there is more service to abutting land uses. Traffic flow is given preference to lesser streets.

STREET, PRIVATE – A street that has not been accepted for maintenance and public ownership by the City of Pacific or other governmental entity. This does not include private driveways or access easements.

STREET TREES – Street trees will mean any tree located within any portion of the public right-of-way.

STREETSIDE IMPROVEMENTS – All of the street pavement, curb, gutter, sidewalk, transit 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 the development.

SURVEYOR – Any Washington State licensed professional land surveyor who represents the owner.

SWALE – A shallow drainage conveyance with relatively gentle side slopes, generally with flow depths less than 1 foot.

TEMPORARY STREET END – The physical termination of a street with potential for further extension typically ending in a temporary cul-de-sac or hammerhead turnaround.

TRAFFIC – Movement of motorized and non-motorized vehicles, persons, cargo, and equestrians through the transportation network comprised of streets, sidewalks, walkways, and shared use paths.

TRAFFIC CONTROL – Those activities necessary to safeguard the general public, as well as all workers, during the construction and maintenance of street and other facilities within the right-of-way.

TRAFFIC IMPACT ANALYSIS – 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.

TRAIL – Public ways constructed primarily for and open to pedestrians, bicyclists, and equestrians.

TRAVELED WAY – That portion of the street intended for the movement of vehicles, including bicycles in bicycle lanes, but exclusive of shoulders and parking areas.

UNMAINTAINED STREET – Street without the city right-of-way that is accessible to public travel but is not maintained by the City.

UNOPENED RIGHT-OF-WAY – A city right-of-way that exists by dedication or deed but for which no vehicular street meeting these Standards has been constructed by the City or other parties.

URBAN AREA – Those areas designated by the City's comprehensive plans as areas located within an urban growth area (UGA) officially adopted by the City Council pursuant to the State Growth Management Act.

UTILITY – Any public or private entity whose principal purpose is to provide electricity, water, sewer, storm drainage, gas, radio, television, telephone, and/or other forms of communication utilizing the electromagnetic spectrum to the public.

VARIANCE – A modification of the terms of this title 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 title would involve practical difficulties and cause undue hardship unnecessary to carry out the spirit and intent of this title.

WORK - The labor or materials or both, superintendence, equipment, transportation, and other facilities necessary to complete the Contract.

WSDOT – Washington State Department of Transportation.

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APPENDIX A

Specifications

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APPENDIX B

Construction Stormwater Pollution Prevention Plan Short Form

Construction Stormwater Pollution Prevention Plan Short Form (SWPPP Short Form)

(Per KCSWDM Section D.7, applicable to any site disturbing less than 1 acre of area and not subject to drainage review under the KCSWDM.)

Project Name: _____
Address: _____
Contact/Owner: _____ Phone _____
Erosion Control Supervisor: _____
Phone: _____ Cell: _____ Pager: _____
Emergency (after hours) Contact: _____ Phone _____
Permit No.: _____
Parcel No.: _____

Required Submittals

1. Project Narrative

The Construction Stormwater Pollution Prevention Plan (SWPPP) Short-Form Narrative must be completed as part of this packet. Any information described, as part of the narrative, should be shown on the site plan.

NOTE: From October 1 thru April 30, clearing, grading, and other soil disturbing activities shall only be permitted by special authorization from the jurisdiction.

A. Project Description (Check all that apply)

☐ New Structure ☐ Building Addition ☐ Grading/Excavation ☐ Paving
☐ Utilities ☐ Other: _____

Total project area: _____ (square feet)
Total proposed impervious area: _____ (square feet)
Total existing impervious area: _____ (square feet)
Total proposed area to be disturbed: _____ (square feet)
Total volumes of proposed cuts/fill: _____ (cubic yards)

Additional Project Information:

B. Existing Site Conditions (Check all that apply)

- Describe the existing surfaces on the site. (Check all that apply)

☐ Forest ☐ Pasture/Prairie Grass ☐ Pavement ☐ Landscaping ☐ Brush

☐ Trees ☐ Other: _____

- Describe how surface water (stormwater) drainage flows across/from the site.
(Check all that apply)

☐ Sheet Flow ☐ Gutter ☐ Catch Basin ☐ Ditch/Swale ☐ Storm Sewer

☐ Stream ☐ Other: _____

- Describe any unusual site condition(s) or other features of note.

☐ Steep Grades ☐ Large Depression ☐ Underground Tanks ☐ Springs

☐ Easements ☐ Existing Structures ☐ Existing Utilities

☐ Other: _____

C. Adjacent Areas (Check all that apply)

- Check any adjacent areas that may be affected by site disturbance and describe fully in Item 2 below:

☐ Streams* ☐ Lakes* ☐ Wetlands* ☐ Steep Slopes*

☐ Residential Areas ☐ Roads ☐ Ditches, pipes, culverts

☐ Other: _____

* If site is on or adjacent to a critical area, the jurisdiction may require additional information, engineering, and other permits to be submitted with this short-form.

- Describe how and where surface water enters the site from upstream properties:

- Describe the downstream drainage path leading from the site to the receiving body of water. (Minimum distance of one-quarter mile (1,320 feet).) {For example: "Water flows from site, into curb-line to catch basin at intersection of X and Y streets. A 10-inch pipe system conveys water another 1000 feet to a ravine/wetland."}

D. Soils (Check all that apply)

The intent of this section is to identify when additional soils information may be required for applicants using this short form. There are other site-specific issues that may necessitate a soils investigation or more extensive erosion control practices. The jurisdiction will determine these situations on a case-by-case basis as part of their review.

1. Does the project propose infiltration? Infiltration systems require jurisdictional approval.

☐ Yes ☐ No

2. Does the project propose construction near or on steep slopes?

☐ Yes ☐ No

If infiltration is proposed for the site or steep slopes have been identified, the jurisdiction will require soils information as part of the project design. The applicant must contact a soil professional or civil engineer specializing in soil analysis to perform an in-depth soils investigation. If “yes” is checked for either question, the jurisdiction may not permit the use of this short-form.

E. Construction Sequencing/Phasing

1. The standard construction sequence is as follows:

- Mark clearing/grading limits.
- Call Building Inspector to inspect clearing/grading limits.
- Install initial erosion control practices (construction entrance, silt fence, catch basin inserts).
- Contact Building Inspector to inspect initial erosion control practices.
- Clear, grade, and fill site as outlined in the site plan, while implementing and maintaining temporary erosion and sediment control practices at the same time.
- Install permanent erosion protection (impervious surface, landscaping, etc.).
- Contact Building Inspector for approval of permanent erosion protection and site grades.
- Remove erosion control methods as permitted by the Building Inspector and repair permanent erosion protection as necessary.
- Monitor and maintain permanent erosion protection until fully established.

List any changes from the standard construction sequence outlined above.

2. Construction phasing: If construction is going to occur in separate phases, describe:

F. Construction Schedule

1. Provide a proposed construction schedule (dates construction starts and ends, and dates for any construction phasing).

Start Date: _____ End Date: _____

Interim Phasing Dates: _____

Wet Season Construction Activities: Wet season occurs from October 1 to April 30.

Describe construction activities that will occur during this time period.

| |
|--|
| |
|--|

NOTE: Additional erosion control methods may be required during periods of increased surface water runoff.

2. Site Plan (See attached: Guidelines for Erosion Control Practices and sample Site Plan)

A site plan, to scale, shall be included with this checklist that shows the following items:

- ☐ a. Address, Parcel Number, Permit Number and Street Names
- ☐ b. North Arrow
- ☐ c. Indicate boundaries of existing vegetation (e.g., tree lines, grassy areas, pasture areas, fields, etc.).
- ☐ d. Identify any onsite or adjacent critical areas and associated buffers (e.g., wetlands, steep slopes, streams, etc.).
- ☐ e. Identify any FEMA base flood boundaries and Shoreline Management boundaries.
- ☐ f. Show existing and proposed contours.
- ☐ g. Delineate areas that are to be cleared and graded.
- ☐ h. Show all cut and fill slopes, indicating top and bottom of slope catch lines.
- ☐ i. Show locations where upstream runoff enters the site and locations where runoff leaves the site.
- ☐ j. Indicate existing surface water flow direction(s).
- ☐ k. Label final grade contours and indicate proposed surface water flow direction and surface water conveyance systems (e.g., pipes, catch basins, ditches, etc.).
- ☐ l. Show grades, dimensions, and direction of flow in all (existing and proposed) ditches, swales, culverts, and pipes.
- ☐ m. Indicate locations and outlets of any dewatering systems (usually to sediment trap).
- ☐ n. Identify and locate all erosion control techniques to be used during and after construction.

Onsite field verification of actual conditions is required.

Guidelines for Erosion Control Practices

As required by the Department of Ecology, this SWPPP must contain the 12 required elements. Check off each element as it is addressed in the SWPPP Short Form and/or on your site plan. Provide explanation if any element is not applicable. Applicable BMPs shall be attached to the SWPPP Short Form.

- ☐ 1. Mark Clearing Limits (orange construction fence, staking with ribbon)
- ☐ 2. Establish Construction Access (gravel entrance, tire wash area)
- ☐ 3. Control Flow Rates (using pipe, drainage swales, berms)
- ☐ 4. Install Sediment Controls (silt fence, sediment traps)
- ☐ 5. Stabilize Soils (mulch, hydroseed, straw)
- ☐ 6. Protect Slopes (divert water from top of slope, cover with plastic or erosion control blanket)
- ☐ 7. Protect Drain Inlets (catch basin inserts)
- ☐ 8. Stabilize Channels and Outlets (cover with grass, riprap)
- ☐ 9. Control Pollutants (maintain equipment to prevent leaks)
- ☐ 10. Control Dewatering (pump to sediment trap)
- ☐ 11. Maintain BMPs (weekly maintenance/replacement, preparation for storm events)
- ☐ 12. Manage the Project (establish construction schedule, phasing, contact numbers)

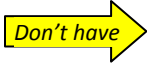
APPENDIX C

Checklists and Sample Forms

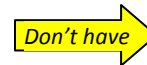
Checklists

- Counter Checklist for Engineering Plans (Minimum Requirements)
- Plan Review Checklist (Minimum Requirements)
- Technical Information Report (TIR) Checklist
- As-Built Drawing Requirements

Sample Forms



- Easement for Utility Mains and Appurtenances
- Maintenance Bond
- Right-of-Way Performance Bond
- Waiver of Protest Agreement
- Preconstruction Conference Agenda
- Overload Permit and Approved Route
- Bond Release Request
- City of Pacific Fee Schedule



- Final Plat Approval



Counter Checklist for Engineering Plans (Minimum Requirements)

| Item | Yes | No | N/A | Comments |
|--|-----|----|-----|----------|
| 1. Cover Sheet, Project Title, and Sheet Index | | | | |
| 2. Vicinity Map, Legend, North Arrow, and Scale Bar | | | | |
| 3. A horizontal scale of not more than 1"=50' and a vertical scale of not more than 1"=10' | | | | |
| 4. Erosion control Plans, Details, and City Standard Erosion and Sediment Control Notes | | | | |
| 5. Stormwater Pollution Prevention Plan (SWPPP) | | | | |
| 6. Street Plan and Profile Drawings, Details, and City Standard Street Construction Notes | | | | |
| 7. Storm Drainage Plans, Details, and City Standard Storm Drainage Notes | | | | |
| 8. Technical Information Report (TIR) | | | | |
| 9. Water Plans, Details, City Water Notes, and Calculations | | | | |
| 10. Sanitary Sewer Plans, Details, City Water Notes, and Calculations | | | | |
| 11. Landscape Plans, Details, and City Standard Landscaping Notes | | | | |



Plan Review Checklist (Minimum Requirements)

Review Planner: _____ Date: _____

Review Engineer: _____ Date: _____

Development Name: _____

Development Address: _____

Owner Name: _____ Phone: _____

Owner Address: _____

Contact Person: _____ Phone: _____

Contact Address: _____

Development Engineer: _____

Contact: _____ Phone: _____

Engineer's Address: _____

1. General and Agency Approval

| Description | Yes | No | N/A | Comments |
|---------------------------------|-----|----|-----|----------|
| Easement Type and Width | | | | |
| City General Construction Notes | | | | |
| Zoning | | | | |
| Landscaping (PMC 20.70) | | | | |
| Parking (PMC 20.72) | | | | |
| SEPA Checklist | | | | |
| Wetland Study | | | | |
| Soils Report | | | | |
| Traffic Report | | | | |
| Flood Plain Elevation | | | | |
| City Fire Marshall | | | | |
| Right-of-Way and Width | | | | |
| Engineer Stamp (signed & dated) | | | | |



| | | | | |
|---|--|--|--|--|
| Title Block with Firm Name | | | | |
| Project Title, Date, Sheet Number of Total Sheets | | | | |
| Name of Design Engineer on Plans and Engineer's Stamp (signed and dated) | | | | |
| Signature Block for City Approval | | | | |
| Project Address | | | | |
| A horizontal scale of not more than 1"=50' and a vertical scale of not more than 1"=10' | | | | |
| Existing and Proposed Survey Monuments Locations and Details | | | | |
| Property Lines, Parcel Numbers, Street Names, and Street Address | | | | |
| Define Survey Baseline | | | | |

2. Cover and/or Note Sheet

| Description | Yes | No | N/A | Comments |
|-------------------------------|-----|----|-----|----------|
| Vicinity Map | | | | |
| Key Map or Location Map | | | | |
| Sheet Index | | | | |
| City of Pacific General Notes | | | | |
| Construction Sequence | | | | |
| Section, Township, Range | | | | |
| Source of Survey | | | | |
| Datum and Benchmark (NGVD 88) | | | | |
| Temporary Benchmark | | | | |
| State Plan North Zone | | | | |
| Legend | | | | |
| North Arrow (all plan sheets) | | | | |
| Scale Bar (all plan sheets) | | | | |

3. Erosion Control

| Description | Yes | No | N/A | Comments |
|--------------------------------------|-----|----|-----|----------|
| Buffer Requirements | | | | |
| Temporary Erosion & Sediment Control | | | | |
| Limits of Vegetation | | | | |
| Run-Off Discharge | | | | |
| Detail References | | | | |



4. Grading and Filling

| Description | Yes | No | N/A | Comments |
|--|-----|----|-----|----------|
| Maximum Depth of Cut and Fill | | | | |
| Quantity Depth of Cut and Fill | | | | |
| Existing Contours extend off-site | | | | |
| Contours at 2' Intervals | | | | |
| SWPPP | | | | |
| Applicable Details | | | | |
| City Standard Erosion and Sediment Control Notes | | | | |
| A horizontal scale of not more than 1"=50' and a vertical scale of not more than 1"=10' | | | | |
| North Arrow and Scale Bar | | | | |
| Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); contours extending at least 50 feet beyond property lines; existing utility pipes with size and material; and appurtenances. | | | | |
| Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines. <ul style="list-style-type: none"> Pipe - location(s), diameter, length, material, slope, and relevant Detail reference(s) Structure(s) – structure number, location(s), type and/or size, top elevation, invert elevations, necessary appurtenances, and relevant Detail reference(s) Other appurtenances with relevant Details reference(s) | | | | |
| The storm water system point of discharge to public or off-site system. | | | | |
| Silt fence to control sediment laden storm water from exiting the construction site. | | | | |
| Sediment traps to contain sediment in controlled site run-off. | | | | |
| Stabilized construction entrance to reduce sediment from being tracked off the construction site. | | | | |



5. Street Plan (and Profile)

| Description | Yes | No | N/A | Comments |
|---|-----|----|-----|----------|
| Transportation Plan Compliance | | | | |
| North Arrow and Scale Bar | | | | |
| Right-of-Way and Width | | | | |
| Existing Road Features Shown | | | | |
| Existing Signage | | | | |
| Pavement Width | | | | |
| Shoulders | | | | |
| Sidewalk | | | | |
| Curb and Gutter | | | | |
| Channelization | | | | |
| Taper (Transition) | | | | |
| Edge of Pavement | | | | |
| Striping | | | | |
| Signage | | | | |
| Detail References | | | | |
| Street Cross Section | | | | |
| Curb Ramps per ADA | | | | |
| Profile with Elevations | | | | |
| Driveway Type, Locations, and Widths | | | | |
| Street Lighting | | | | |
| A horizontal scale of not more than 1"=50' and a vertical scale of not more than 1"=10' | | | | |
| North Arrow and Scale Bar | | | | |
| Horizontal data, including: <ul style="list-style-type: none"> Limits of right-of-way Centerline with bearing Stationing Monumentation at: intersections, cul-de-sacs, PTs, PCs, and PRCs Alignment Horizontal curve data: PC, PT, and or PRC Pavement widths Cul-de-sac widths | | | | |



| | | | | |
|--|--|--|--|--|
| Vertical data, including: <ul style="list-style-type: none"> • Stationing • Existing and proposed centerline profile with elevations at 50-foot intervals minimum • Gutter line profile with elevations at 50-foot intervals minimum and slopes • Longitudinal slopes expressed as a percent • Vertical curve data required when slope change exceeds 1.0 percent: PC, PT, PI, high point, low point, 50-foot minimum length, elevations at 25-foot intervals | | | | |
| Super Elevated Roadways: <ul style="list-style-type: none"> • Details showing transitions • Details showing adequate gutter flow | | | | |
| Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); existing utility pipes with size and material; and appurtenances. | | | | |
| Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines, including: <ul style="list-style-type: none"> • Curb and Gutter • Driveways • Sidewalks, including length and width • Wheelchair ramps • Signage • Mailboxes | | | | |
| Road section details include 3 percent minimum cross slope | | | | |
| A copy of the City Standard Street Construction Notes shall be included. | | | | |
| Spot Elevations at Curb Returns | | | | |

6. Storm Drainage Plan (and Profiles)

| Description | Yes | No | N/A | Comments |
|--------------------------------|-----|----|-----|----------|
| Storm Drainage Plan Compliance | | | | |
| Late Corners Agreement | | | | |
| North Arrow and Scale Bar | | | | |



| | | | | |
|--|--|--|--|--|
| Existing Drainage Features Shown | | | | |
| Known Drainage Problems in the Area | | | | |
| Pipe: Size, Material, Length, and Slope | | | | |
| Location of Catch Basins (Station and Offset or Dimensions from Property Lines) | | | | |
| Existing Utilities | | | | |
| Utility Crossing Callouts | | | | |
| Technical Information Report (TIR) | | | | |
| A horizontal scale of not more than 1"=50' and a vertical scale of not more than 1"=10' | | | | |
| Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); contours extending at least 50 feet beyond property lines; existing utility pipes with size and material; and appurtenances. | | | | |
| Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines. <ul style="list-style-type: none"> • Pipe - location(s), diameter, length, material, slope, and relevant Detail reference(s) • Structure(s) – structure number, location(s), type and/or size, top elevation, invert elevations, necessary appurtenances, and relevant Detail reference(s) • Utility Crossings – water, sewer, and storm crossings shall be shown with invert and crown elevations, as required • Other appurtenances with relevant Details reference(s) | | | | |
| The storm water system point of discharge to public or off-site system. | | | | |
| A copy of the City Standard Storm Drainage Notes shall be included. | | | | |

7. Sanitary Sewer Plan (and Profile)

| Description | Yes | No | N/A | Comments |
|------------------------|-----|----|-----|----------|
| Sewer Plan Compliance | | | | |
| Late Corners Agreement | | | | |



| | | | | |
|---|--|--|--|--|
| ERUs Required | | | | |
| Scale Bar and North Arrow | | | | |
| Existing Sewer Features Shown | | | | |
| Rights-of Ways and Easements (Dimensioned) | | | | |
| Stationing at Centerline | | | | |
| Match Lines | | | | |
| Service to All Lots (Station and Offset or Dimensions from Property Lines, Size Depth - 5' Minimum Cover at PL) | | | | |
| Pipe: Minimum Cover 3' | | | | |
| Location of Manholes (Station and Offset or Dimensions from Property Lines, Type, Size, Steps, Rim and Inv Elevs) | | | | |
| Clean-outs (Station and Offset or Dimensions from Property Lines) | | | | |
| Location of Valves (Station and Offset or Dimensions from Property Lines) | | | | |
| Location of AARVs (Station and Offset or Dimensions from Property Lines) | | | | |
| Profile Shown | | | | |
| Utility Crossing Callouts | | | | |
| Thrust Blocking | | | | |
| A horizontal scale of not more than 1"=50' and a vertical scale of not more than 1"=10' | | | | |
| Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); existing utility pipes with size and material; and appurtenances. | | | | |
| Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines. <ul style="list-style-type: none"> • Pipes - size, location(s), diameter, length, material, slope, and relevant Detail reference(s) • Structures – structure number size, location(s), type and/or size, rim elevation, invert elevations, necessary appurtenances, basement locations and elevations, and relevant Detail reference(s) • Utility Crossings – water, sewer, | | | | |



| | | | | |
|---|--|--|--|--|
| and storm crossings shall be shown with invert and crown elevations, as required | | | | |
| <ul style="list-style-type: none"> Other appurtenances with relevant Details reference(s) Distance from water lines | | | | |
| A copy of the City Standard Sewer System Notes shall be included. | | | | |
| Sanitary Sewer Notes | | | | |

8. Water

| Description | Yes | No | N/A | Comments |
|--|-----|----|-----|----------|
| Water Plan Compliance | | | | |
| Late Corners Agreement | | | | |
| Fire Flow Requirements Met | | | | |
| ERUs Needed | | | | |
| Scale Bar and North Arrow | | | | |
| Existing Water Features Shown | | | | |
| Rights-of Ways and Easements (Dimensioned) | | | | |
| Stationing at Centerline | | | | |
| Match Lines | | | | |
| Service to All Lots (Station and Offset or Dimensions from Property Lines, Location and Sizing) | | | | |
| Pipe: 36" minimum cover in paved areas 42" minimum cover in unpaved areas | | | | |
| Are any Wet Taps Required | | | | |
| Location of Valves (1,000' Maximum Spacing) | | | | |
| Location of Fire Hydrants (Spacing, Storz Fittings, Relocation) | | | | |
| Blow-Off Hydrants (Station and Offset or Dimensions from Property Lines, Location) | | | | |
| Air/Vacuum Relief Valves (Station and Offset or Dimensions from Property Lines, Location) | | | | |
| Pressure Reducing Valves or Stations (Station and Offset or Dimensions from Property Lines, Location and Sizing) | | | | |
| Backflow Prevention (Station and Offset or Dimensions from Property Lines, Location, and Sizing) | | | | |
| Testing Requirements | | | | |
| Disposal of Flushing Water | | | | |



| | | | | |
|---|--|--|--|--|
| Is there any Irrigation | | | | |
| Thrust Blocking | | | | |
| Detail References | | | | |
| A horizontal scale of not more than 1"=50' and a vertical scale of not more than 1"=10' | | | | |
| Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); existing utility pipes with size and material; and appurtenances. | | | | |
| Locations and type of all proposed features, above and below ground, including: station and offset or dimensions from property lines. <ul style="list-style-type: none"> • Pipe - size, location(s), diameter, length, material, and relevant Detail reference(s) • Fittings - location(s), diameter, material, joint configuration(s), and relevant Detail reference(s) • Valve - location(s), size, necessary appurtenances, and relevant Detail reference(s) • Hydrant - location(s), appurtenances and relevant Details reference(s) • Service meter - location(s) and relevant Details reference(s) • Utility Crossings – water, sewer, and storm crossings shall be shown with invert and crown elevations, as required • Post Indicator Valve and Fire Department Connection - location, size, and relevant detail references • Other appurtenances with relevant Details reference(s) | | | | |
| A copy of the City Water System Notes shall be included. | | | | |

9. Landscaping

| Description | Yes | No | N/A | Comments |
|--|-----|----|-----|----------|
| A horizontal scale of not more than 1'=50' | | | | |
| North Arrow and Scale Bar | | | | |



| | | | | |
|---|--|--|--|--|
| Locations and type of existing features, above and below ground, including: surfacing; rights-of-way and easements (with applicable County Recording Number); contours extending at least 50 feet beyond property lines; existing utility pipes with size and material; and appurtenances. | | | | |
| Locations and type of all proposed features, above and below ground, including: <ul style="list-style-type: none"> • Fencing - location(s), type, gate(s), quantity, and relevant Detail reference(s) • Parking – location(s), quantities with calculations, handicap parking, semi-truck turn around, etc. • Trees - location(s), caliper, variety, quantity, and relevant Detail reference(s) • Shrubs – location(s), variety, quantity, and relevant Detail reference(s) • Ground Covers – location(s), variety, quantity, and relevant Detail reference(s) • Irrigation System – location(s), water meter, backflow prevention assembly, pressure reduction devices, valves, sprinkler heads, zones, and relevant Detail reference(s) | | | | |



Technical Information Report (TIR) Checklist

PROJECT NAME: _____

DATE: _____

PROPONENT: _____

CONSULTANT: _____

FILE: _____

| | Yes | No | N/A | |
|-------------------------------------|-----|----|-----|---|
| General | | | | |
| 1 | | | | Table of Contents with page numbers |
| 2 | | | | Stamp, signature, and date from the project civil engineer |
| 3 | | | | Meet all requirements of KCSWDM 2.3.1.1 |
| Section I – Project Overview | | | | |
| 4 | | | | Narrative – pre- and post development A. General description B. Site and project area C. Size of improvements D. Pre-developed and developed disposition of stormwater E. Identify and difficult site parameters, the natural drainage system, and drainage to and from the site including bypass flows |
| 5 | | | | Figure 1 – TIR worksheet |
| 6 | | | | Figure 2 – Site Location A. Identify all roads that boarder the site B. Identify significant geographic features and critical areas (lakes, streams, steep slopes, etc.) |
| 7 | | | | Figure 3 Drainage Basins, Sub-Basins and Site Characteristics A. Acreage of sub-basins B. Existing discharge points to and from site C. Routes of existing, construction and future flows at all discharge points and downstream hydraulic structures D. Minimum USGS 1:2400 topo map base E. Show (and cite) length of travel for farthest upstream end of proposed storm system in development to any proposed flow control facility |



| | Yes | No | N/A | |
|---|-----|----|-----|---|
| 8 | | | | Figure 4 – Soils Map A. The project site B. Area draining to site C. Drainage downstream of site for a distance of the downstream analysis |
| Section II – Conditions and Requirements | | | | |
| 9 | | | | Pre-Approval conditions and applicable requirements pertaining to site engineering A. SEPA mitigations B. Environmentally sensitive area requirements C. Variances and adjustments D. Conditions of plat approval E. Rezones F. Conditional Use Permits |
| Section III – Offsite Analysis | | | | |
| 10 | | | | Meet all requirements of KCSWDM 2.3.1.1, see KCSWDM 2.3.1.1 for further detail. |
| 11 | | | | Level 1 downstream analysis provided |
| 12 | | | | If required by the City, level 2 or 3 downstream analysis provided or additional analysis provided |
| 13 | | | | Task 1: Study Area Definition and Maps Map at 1"=100' with delineation of upstream tributary area to the site and site areas tributary to the downstream system. The map shall show the property lines, best available topography, study area boundaries, site boundaries, downstream flowpath for one-quarter mile and locations of existing and potential problems. |
| 14 | | | | Task 2: Resource Review Document and describe existing and potential flooding, erosion, and water quality problems in the upstream and downstream drainage basins for the site determined through review of resources listed in KCSWDM 2.3.1.1. |
| 15 | | | | Task 3: Field Inspection Physically inspect the existing on and offsite drainage system of the study area for each discharge location. Investigate any evidence existing and potential problems with drainage features. Note the date and conditions during the inspection. |
| 16 | | | | Task 4 Drainage System Description and Problem Descriptions Each drainage system component and problem shall be addressed in three places: on a map, in the narrative, and in the Offsite Analysis Drainage System Table. A. Drainage System Description: Provide information regarding the drainage system including location, size, length, slope, vegetation, land cover, change characteristics, drainage structures, problems (including copies of complaints), and field observations. B. Problem Descriptions: All existing and potential drainage and water quality problems identified in the resource review or field inspection shall be described as required by KCSWDM 2.3.1.1. |



| | Yes | No | N/A | |
|---|-----|----|-----|--|
| 17 | | | | Task 5: Mitigation or Existing or Potential Problems A. For existing or potential offsite drainage problems matching those described in KCSWDM 1.2.2.1, demonstrate that the proposed project neither aggravates (if existing) nor creates the problem. B. For any existing or potential water quality problems matching those described in KCSWDM 1.2.2.1, document how the applicable water quality problem-specific mitigation requirements in KCSWDM 1.2.2.3 will be met |
| 18 | | | | Downstream analysis A. Drainage system description and problem descriptions B. Mitigation of existing or potential problems |
| Section IV – Retention/Detention Analysis and Design | | | | |
| A – Existing Site Hydrology | | | | |
| 19 | | | | Acreages, soil types, and land covers used to determine existing flow characteristics |
| 20 | | | | Basin maps, graphics, exhibits for each sub-basin |
| 21 | | | | On the Basin Map include the following: delineation and acreage of on-site areas and areas contributing to run-off to the site, flow control facility location, outfall and overflow route shown on topographic map |
| 22 | | | | Sub-basins labeled and KCRTS parameters referenced |
| 23 | | | | Natural streams and drainage features, including wetlands and depressions must be shown. |
| 24 | | | | 100-year flood plain delineation along rivers, closed depressions, streams, lakes, and wetlands |
| B – Developed Site Hydrology | | | | |
| 25 | | | | Narrative, mathematical, and graphical presentation of parameters selected and values used for the developed site conditions including acreages, soil types, land covers, roadway layouts and all constructed drainage facilities and flow control BMPs |
| 26 | | | | Developed basin areas and flow depicted on a map, referenced to computer printout or calculation sheets with areas highlighted and tabulated in a listing of all developed sub-basin flows |
| 27 | | | | Sub-basins labeled maintained to match existing site hydrology where possible. KCRTS parameters referenced |
| C – Performance Standards | | | | |
| 28 | | | | Provide a brief discussion of the applicable conveyance system capacity standards |
| 29 | | | | Provide a brief discussion of the applicable area specific flow control facility standards and flow control BMP requirements |
| 30 | | | | Provide a brief discussion of the applicable area specific water quality treatment and applicable special requirements for source control or oil control |



| | Yes | No | N/A | | |
|--|--|----|---|---|--|
| D – Flow Control System | | | | | |
| 31 | | | | Sketch – Flow control facility and appurtenances with dimension and volume calculations from zero to maximum head; orifice sizes and head relationships; control structures/restrictor orientation to facility and facility orientation to the site. Show basic measurements and dimensions, orientation on the site, and flowpath lengths. | |
| 32 | | | | Supporting documentation such as computer printouts, references equations, calculations, tables, graphs, and other data to support volume storage facilities. KCRTS facility documentation files to verify the facility meets the performance standards. | |
| 33 | | | | Volumetric factor of safety used, clearly identified, and rational for selection. | |
| 34 | | | | Emergency Spillway calculations provided. | |
| 35 | | | | Flow control BMP credit meets KCSWDM 5.2.2, documented, and explained. | |
| 36 | | | | Design infiltration rates provided and documents with a soils report or other calculations. | |
| E – Water Quality System | | | | | |
| 37 | | | | Illustrative sketch of proposed facilities, source controls, and appurtenances. | |
| 38 | | | | Computer printouts, calculations, equations, references, and graph necessary to substantiate design. Documentation for water quality credit option provided | |
| Section V – Conveyance System Analysis and Design | | | | | |
| 39 | | | | If design results are on computer printout, provide summary tabulation of performance. | |
| 40 | | | | Pipe flow tables, flow profile computation tables, nomographs, charts, graphs, detail drawings, other aids used to design and confirm performance. | |
| 41 | | | | Verification of capacity and performance provided for each element of the conveyance system. Show velocities and flow for all drainage facilities within the development as well as those offsite affected by the development. | |
| Section VI – Special Reports and Studies | | | | | |
| 42 | <input type="checkbox"/> Anadromous Fish Impacts <input type="checkbox"/> Flood Plains <input type="checkbox"/> Fluvial Geomorphology <input type="checkbox"/> Geology <input type="checkbox"/> Flood Protection | | <input type="checkbox"/> Geotechnical / Soils <input type="checkbox"/> Groundwater <input type="checkbox"/> Hydrology <input type="checkbox"/> Slope Protection / Stability <input type="checkbox"/> Critical Areas | | <input type="checkbox"/> Structural Design <input type="checkbox"/> Structural Fill <input type="checkbox"/> Water Quality <input type="checkbox"/> Wetlands <input type="checkbox"/> Erosion/Deposition |
| Section VII – Other Permits | | | | | |
| 43 | <input type="checkbox"/> Dam Safety <input type="checkbox"/> NPDES <input type="checkbox"/> UIC Well Registration <input type="checkbox"/> WSDNR | | <input type="checkbox"/> WDOE <input type="checkbox"/> WSDOT <input type="checkbox"/> USACE <input type="checkbox"/> WSDFW | | |



| | Yes | No | N/A | |
|--|-----|----|-----|---|
| Section VIII – CSWPPP Analysis and Design | | | | |
| 44 | | | | ESC Plan Analysis and Design (Part A) Include all information used to analyze and design the erosion and sediment control measures including final site stabilization measures. Explain how the proposed ESC measures comply with Erosion and Sediment Control Standards (KCSWDM Appendix D) and Core Requirements #5, KCSWDM 1.2.5. |
| 45 | | | | Discussion of each measure specified in Section 1.2.5 and their applicability to the project |
| 46 | | | | Hydrologic and hydraulic information used to analyze and size ESC facility. Describe the methodology, and attach any graphics or sketches used to size facilities. |
| 47 | | | | Identify and discuss any areas with particularly high susceptibility to erosion due to slopes or soils and special measures taken to protect these areas |
| 48 | | | | Special measures for high erosion areas. Identify any ESC recommendations within any of the project's special reports. |
| 49 | | | | If proposed exceptions or modifications to the standards detailed in the ESC Standards (KCSWDM Appendix D), clearly present rational/supporting documentation. |
| 50 | | | | Stormwater Pollution Prevention and Spill Plans SWPPS Plan Design (Part B) Identify all activities that could contribute pollutants to surface and stormwater during construction. Provide sufficient information to justify the selection of specific stormwater pollution prevention BMPs proposed to be applied to the pollution-generating activities that will occur with construction of the proposed project. |
| 51 | | | | Provide discussion of each anticipated pollution-generating activity and the pollution prevention BMP selected to address it. Provide calculations required for the selected BMP. If an alternate BMP or major modification to a standard BMP will be used, a written request detailing how the alternative will work must be submitted for review and approval. |
| 52 | | | | Provide discussion of the receiving waters. |
| Section IX – Bond Quantities, Facility Summaries, and Declaration of Covenant | | | | |
| 53 | | | | Bond Quantities Worksheet |
| 54 | | | | Flow Control and Water Quality Facility Summary Sheet and Sketch |
| 55 | | | | Declaration of Covenant for Privately Maintained Flow Control and WQ Facilities |
| 56 | | | | Declaration of Covenant for Privately Maintained Flow Control BMPs |
| Section X – Operation and Maintenance Manual | | | | |
| 57 | | | | For each flow control and water quality facility provide a brief description of the facility, its purpose, and how it works. |
| 58 | | | | Provide a copy of the applicable Maintenance Requirements for Flow Control, Conveyance, and WQ Facilities tables (from KCSWDM Appendix A) and provide an outline of maintenance tasks and recommended frequency that each task shall be performed. |

Additional Comments:

[illegible]

AS-BUILT DRAWING REQUIREMENTS

MINIMUM AS-BUILT REQUIREMENTS:

The following as-built requirements are intended to provide a guide as to the *minimum* criteria for Developers, Engineers of record, and Licensed Land Surveyors, and should be used along with good engineering and surveying practices for the type of project and as the situation warrants.

GENERAL:

Identify and show on the "As-built Plans" all existing or abandoned utilities that were encountered during construction that were not shown on the design plans correctly.

The preferred method to show locations (both for proposed construction and as-built) is by the use of survey lines or centerlines between existing survey monuments with suitable distances (or situations) and offsets given relative to these lines. The next acceptable method for showing locations is by the use of State Plane Coordinates for each point located. For the latter method, the surveyor must clearly show: which survey points or monuments he used to begin his location work; the State Plane survey points or monuments; the bearings and distances to all temporary control points; and the coordinates of each point located.

All elevation information shall be based upon City of Pacific datum, and the proposed construction plans and as-built drawings will identify the Bench Mark used and the elevation Bench Mark. The use of assumed elevations is not acceptable, although the Engineering Department may, at its option, accept depths measured with respect to the top of existing pavement surfaces, in lieu of actual elevations, depending on the scope of the proposed project.

All As-Built plan sheets must include at least four (4) coordinate tics spaced across the extent the plan view. The tics must be clearly labeled with State Plane Coordinate values.

In addition, the following information shall be shown/corrected on the "As-built Plans," depending on the type of project it is:

CERTIFICATION:

Certified as-builts are to be provided by a State of Washington licensed Land Surveyor. Certified as-builts shall accurately reflect all field design revisions made during the construction process. All required as-built information shall be clearly shown on the original design Mylar drawings approved for construction by the City of Pacific. In lieu of correcting the original design mylar drawings, a new set of AutoCAD-prepared mylars may be submitted which are based upon the as-built information. In either case, each sheet of the as-built plans shall include the following statement along with the professional surveyor's stamp and date of expiration of said stamp. The stamp shall be signed and the expiration date filled in. The statement should be located in the bottom left hand corner of the as-built drawing whenever possible.

"I CERTIFY THAT THE LOCATIONS, ELEVATIONS, DEPTHS, AND AS-BUILT COMMENTS REFLECTING MATERIALS ACTUALLY USED DURING CONSTRUCTION, ACCURATELY REFLECTS EXISTING FIELD CONDITIONS AS DETERMINED BY ME OR UNDER MY DIRECT SUPERVISION ON THIS DATE: "

Professional PLS Stamp, Expiration Date & Signature

CAD FILES:

When the design plans have been prepared with a CAD program, the design professional is required to provide the City with a digital copy of the approved as-built plans. The digital information can be formatted in either .DWG (AutoCAD 2010 format) or .DXF (Drawing Exchange File), and must be based on State Plane coordinates (North Zone). CAD drawing layer names must be consistent with APWA naming conventions.

STREET AND ROADS:

| | |
|-------------------------|---|
| Centerline Elevations: | typically every fifty (50) feet; centerline slopes and as-built vertical curve data. |
| Gutter Line Elevations: | every fifty (50) feet if not standard crown section; every two hundred (200) feet in standard crown sections; slopes and as-built vertical curve data at twenty five (25) foot intervals when not in standard crown section and at intersections. |
| Driveways: | locations; widths; design information (was it built per City Standard Detail, if so which one?); and materials. |
| Channelization: | location; start and end of each type of lane markers; materials used if not specified on approved plans. |
| Signing: | location; material (is it high-intensity laminate on aluminum, or is it a painted wood sign?); size and type of sign. |
| Street Lighting: | location; overhang; height; manufacturer name; type and wattage of luminaire bulb. |
| Service Cabinets: | location; size; manufacturer name; and type. |
| Junction Boxes: | location and type. |
| Conduits and Wire: | location; types; sizes; and depths or elevations. |
| Controller Cabinet: | location; size; and manufacturer name. |
| Traffic Signals: | location; size; heights; foundation size and depths; and signal interconnect connection. |
| Right-of-way: | description(s); locations; widths; and recording number. Provide one copy of the recorded easement document. |
| Easements: | description(s); locations; widths; and recording number. Provide one copy of the recorded easement document. |

STORM DRAINAGE PROJECTS:

| | |
|------------------------------|--|
| Manholes/Catch Basins: | location(s); type(s); rim and invert elevations. |
| Storm Lines: | location(s); material(s); lengths; slopes; diameter; elevations on the top of the pipe at all utility crossings; locations of catch basins and side sewer tees; and invert elevations. |
| Side Storm Lines: | locations; materials; lengths; slopes; diameters; invert elevations; and depths of buried stub-outs. |
| Public Utility Easements: | legal description(s); widths; and location of storm drainage appurtenances within the easements and rec. |
| TV Reports: | comparisons of manhole/catch basin and side sewer locations shown on storm drainage as-builts with TV Reports. Submit a CD with .mpg, .avi, .wmv, etc., format video upon request of the City Engineer. |
| Retention/Detention Systems: | volume of constructed system; pond storage and construction limits; overflow elevations and locations; discharge orifice diameters and locations; fence size, location and materials; gate size, location and materials; relationship of access road to provided easement. |
| Water Quality Systems: | system location; width; depth; side slopes; lengths; bottom slopes; elevations of and of locations; vegetation name and condition. |

SANITARY SEWER PROJECTS:

| | |
|---------------------------|---|
| Manholes: | locations; types; rim & invert elevations. |
| Sewer Lines: | locations; materials, lengths; slopes; diameters; elevations along the top of the pipe at one hundred (100) foot maximum intervals; diameter and locations of side sewer tees and stub-outs; and invert elevations. |
| Side Sewer Lines: | tee locations; materials; lengths; slopes; diameter; invert elevations; and depths of buried stub-outs. |
| Public Utility Easements: | legal descriptions; widths; and location of sanitary appurtenances within the easement. Provide one copy of the recorded easement document. |
| TV Reports: | comparison of side sewer locations shown on sewer line as-builts with the TV reports. Submit a CD with .mpg, .avi, .wmv, etc., format video upon request of the City Engineer. |

WATER SYSTEM PROJECTS:

| | |
|----------------------------------|--|
| Water Main Pipes: | locations; materials; depths or elevations at one hundred (100) foot maximum intervals and at all utility crossings; lengths; and diameters. |
| Water Valves: | locations; type; alignment; and depth or elevation. |
| Water Main Blocking: | location and approximate volume bearing surface area. |
| Water Service Lines: | Corp location; materials; diameter; lengths; depth; and stub-out location. |
| Fire Hydrants: | locations; type; and alignment. |
| Blow-offs: | locations; sizes and alignment. |
| Air & Vacuum Relief Valves: | locations; vault sizes; depths; and alignment. |
| Pressure Reducing Valve: | location; vault size; depth; alignment; and as-constructed clearances within vault. |
| Detailed or Complex Connections: | as applicable for situation |
| Fire Flow Lines: | locations; materials; diameter; location and size of detector vault; and any revisions made to detector appurtenances during construction. |

FRANCHISE UTILITIES:

| | |
|------------------------------|---|
| Telephone: | location; materials; size, location and alignment of manholes/vaults, junction boxes and poles; diameter, and elevations of distribution conduits at one hundred (100) foot maximum intervals and at all utility crossings; locations, typical depths, and sizes for all service lines. . |
| Gas: | location; size, location and alignment of valves; diameter, typical depths and elevation of distribution lines at one hundred (100) foot maximum intervals and at all utility crossings; location of tee and line, typical depths, and diameter of all service lines. |
| Power: | location; materials; size, location and alignment of manholes and poles; diameter, and elevation of distribution conduits at one hundred (100) foot maximum intervals and at all utility crossings; locations, typical depths, and sizes for all service lines. |
| TV Cable: | location; materials; size, location and alignment of junction boxes and poles; diameter, and elevations of distribution conduits at one hundred (100) foot maximum intervals and at al utility crossings; locations, typical depths, and sizes for all service lines. |
| Utility Easements Contiguous | |

To City Property:

legal descriptions; widths; location of utility appurtenances within the easement; and recording number. Provide one copy of the recorded easement document.

"AS-BUILT" DRAWING

I CERTIFY THAT THE LOCATIONS, ELEVATIONS, DEPTHS, AND AS-BUILT COMMENTS REFLECTING MATERIALS ACTUALLY USED DURING CONSTRUCTION, ACCURATELY REFLECTS EXISTING FIELD CONDITIONS AS DETERMINED BY ME, OR UNDER MY DIRECT SUPERVISION ON THIS DATE: _____.

PUBLIC LAND SURVEYOR

DATE

STAMP

APPENDIX D

Standard Notes

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STANDARD NOTES

GENERAL CONSTRUCTION NOTES

1. All workmanship and materials will be in accordance with the *Pacific Development Standards*, City of *Pacific Municipal Code*, Ordinances and City Council or Hearing Examiner conditions of Project Approval. These documents are supplemented by the most current edition of the WSDOT/APWA Standard Specifications.
2. All materials used for construction shall be new and undamaged and shall be made available for inspection and approval by the City of Pacific prior to installation. The contractor shall provide the City of Pacific with a Certificate of Materials from the supplier, if requested. All work and materials that do not meet the above specifications must be removed as directed by the Project Inspector.
3. The contractor will be responsible for all traffic control in accordance with *U.S. Department of Transportation Manual on Uniform Traffic Control Devices* (MUTCD). Prior to disruption of any traffic, traffic control plans will be prepared and submitted to the City for approval. No work will commence until all approved traffic control is in place. All flaggers must have Flagging Certificates and must have attended a flagging course or an off duty police officer is required. The job will be shut down if any uncertified people are flagging. A stop work order will be given and work will not proceed until a certified person is flagging.
4. Temporary erosion/water pollution measures shall be required in accordance with Section 1-07.15 of the WSDOT/APWA Standard Specifications and applicable requirements of the *King County Surface Water Design Manual* (KCSWDM).
5. During construction, all public streets adjacent to the project shall be kept clean of material deposits resulting from on-site construction, and existing structures shall be protected.
6. The developer and the contractor shall comply with all other permits and other requirements by the City of Pacific or other governing authority or agency as may be applicable.
7. A pre-construction meeting shall be held with the City prior to the start of construction. The contractor shall provide the City with a construction schedule and a copy of all permits issued by Agencies other than the City.
8. A copy of the approved Plans shall be available on the site at all times during construction.
9. All project elements shall be staked by a licensed professional qualified to perform the work.
10. The contractor shall call underground locate line 1-800-424-5555 minimum 48 hours prior to any excavations. The locations of underground utilities are shown in an approximate way only and have not been independently verified by the owner or its representatives. The contractor shall determine the exact location of all utilities prior to commencing work, and agrees to be fully responsible for any damage which might be occasioned by the contractor's failure to exactly locate preserve any and all underground

utilities. The City, the owner, and the engineer shall be notified immediately if any conflict exists.

11. All utility trenches excavated in the right-of-way shall be backfilled with 5/8-inch crushed rock. The trenches shall be backfilled and compacted to 95 percent density in accordance with WSDOT 7-08.3(3).
12. The City of Pacific allows work from 7:00 A.M. to 7:00 P.M., seven days a week. If work is done on weekends, please inform the City of Pacific so that an Inspector can be available on site. Contractor will be billed for Overtime.
13. **INSPECTION:** All aspects of this project will be inspected including piping, backfill, sub-grade, concrete and asphalt, as well as forms, curb, gutter and sidewalk. If a portion gets backfilled before inspection, the contractor will dig up that portion for inspection. **24-HOUR NOTICE REQUIRED.** Know the schedule and let the City know. Call 48-hours before the following:
 - A. For inspection, contact (253) 929-1110.
 - B. Prior to work start-up
 - C. Prior to any utility construction in the right of way.
 - D. Prior to pouring cast-in-place concrete structures.
 - E. Prior to placing any crushed rock on roadway sub grade.
 - F. Prior to placing curb, gutters and sidewalks.
 - G. Prior to asphalt paving.
14. All compaction test shall be approved by the City of Pacific Engineer and/or Inspector prior to placing of crushed surfacing, asphalt, curb, gutter, sidewalk (Including trench restoration when test may be required in each lift).
 - A. Items to be compaction tested will include the pipe bedding (Section 7-08.3(1)C), Backfill (Section 7-08.3(3) and sub-grade for surfacing (Section 2-06.3(2)) and asphalt (Section 5-04.3(10)B).
 - B. City of Pacific may require additional tests on sub-grade, trenches, concrete, or asphalt. The costs of testing shall be paid for by the developer.
 - C. Roadway embankment and subgrade construction:
 1. Crushed Surfacing shall be compacted to 95 percent of maximum density. No recycled material allowed.
 2. Embankment and sub grade must be compacted to 95 percent of maximum density.
 3. Proper moisture must be maintained throughout placing and compacting.
 4. Compaction testing to be performed by an independent lab. Use a "Modified Proctor."

- D. Trenches in developed right-of-way:
 - 1. See City of Pacific Standard Construction Details and Section 7 of the current WSDOT Specifications for Road, Bridge and Municipal Construction.
 - 2. Pipe zone shall be compacted to 90 percent of maximum density.
 - 3. Trench zone shall be compacted to 95 percent of maximum density in 12-inch lifts.
 - 4. Crushed Surfacing shall be compacted to 95 percent of maximum density.
- 15. RESTORATION OF RIGHT-OF-WAY:
 - A. Contractor must leave the right-of-way, equal to existing or better condition
 - B. Place compacted topsoil (Section 9-14.1(1), (2) and (3)) and seed all areas disturbed by excavation. (Section 9-14.2). All drainage systems must be fully cleaned, restored, and operational before final acceptance. (Section 7-07.3).
- 16. FINAL INSPECTION AND ACCEPTANCE:
 - A. See Section 1-05.11.
 - B. When Contractor has completed all of the work on the approved plans, the contractor will notify the City. The City Engineer, City Inspector, Contractor, and other City of Pacific Departments will walk the site and create a punch list. The Contractor will complete the punch list and check off each item, then return it to the Inspector for re-inspection. The Inspector will verify that items on walk through are completed.
 - C. The City will not make the final inspection until the physical work required by the contract and approved plans, including final cleanup and all work ordered by the City Engineer, has been completed.
 - D. Final approval of the project will not be granted until “as built” drawings (both digital and hard copy) have been received and approved by the City.

EROSION AND SEDIMENT CONTROL NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. A Certified Erosion and Sediment Control Supervisor is required. The ESC Supervisor must have attended and Erosion and Sediment Control class within past 3- years. Provide a copy of certification card.
4. The Certified Erosion and Sediment Control Supervisor will oversee and be responsible for all erosion control. The facilities shall be inspected daily and maintained to ensure proper functioning. Written records shall be kept of weekly reviews and after every significant storm event of the ESC facilities during the wet season (October 1 to April 30). Monthly reviews during the dry season (May 1 to September 30). Written records shall be provided to the Project Manager or Inspector upon request.
5. Provide a sign displaying a 24-hour contact number and name of the ESC Supervisor. The letter size shall be a minimum of 2-inch letters. This shall be in place prior to construction start.
6. In case erosion or sedimentation occurs to adjacent property, all construction work on the project that will aggravate the situation will cease and the contractor shall immediately commence restoration or mitigation measures. Restoration activity shall continue until such time as the problem is rectified.
7. Stabilized construction entrances and roads shall be installed at the beginning of construction and maintained during the duration of the project. Additional measures may be required such as wash pads to ensure that all paved areas are kept clean. No mud is allowed to enter onto City streets.
8. All necessary facilities shall be maintained on-site to prevent debris, and mud from accumulating on the public right-of-way.
9. In any area which has been stripped of vegetation and where no further work is anticipated for a period of 2-7 days or more, all disturbed areas must be immediately stabilized with mulching, grass planting, or other approved erosion control treatment applicable to the time of year in question. Grass seeding alone will be acceptable only during the months of April through September, inclusive. Seeding may proceed, however, whenever it is in the interest of the contractor, but must be augmented with mulching, netting, or other treatment.
10. All stock piled material (bedding, trench excavation, trench backfill) subject to erosion shall be covered with 0.06 mil plastic sheeting secured in place with sandbags or equivalent.
11. The storm drain system and existing ditches shall be cleaned daily (Section 7- 07.3). All drainage systems shall be cleaned to the acceptance of the City of Pacific prior to acceptance of the project.
12. Two (2) weeks prior to the beginning of the wet season (October 1), all disturbed areas shall be reviewed to identify which ones can be seeded in preparation for the winter rains.

Disturbed areas shall be seeded within one (1) week of the beginning of the wet season. A sketch map of those areas to be seeded and those areas to remain uncovered shall be submitted to the Project Manager. The Project Manager can require seeding in additional areas in order to protect surface waters, adjacent properties, or drainage facilities.

13. Penalties for an Erosion Control violation are subject to a \$250 fine under Chapter 24.08.360 – Civil Penalty. Each day is considered a different violation.

STREET CONSTRUCTION NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. All transportation system improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, engineer, and appropriate public agencies.
4. All curbs, street grades, sidewalk grades, and any other vertical and/or horizontal alignment will be staked by engineering or surveying firms capable of performing such work.
5. 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 WSDOT/APWA Standard Specifications. The new asphalt will be feathered back over existing asphalt to provide for a seal at the saw cut location and the joint sealed with Grade AR-4000W paving asphalt.
6. Compaction of sub-grade, rock, and asphalt will be in accordance with the WSDOT/APWA Standard Specifications.
7. All joint (contraction, construction, isolation, etc.) layout plans shall be approved one week before pouring concrete.
8. Form and sub-grade inspection by the City is required before pouring concrete. Twenty-four hours' notice is required for form inspection.
9. Testing and sampling frequencies will be as described in the Standards.
10. All asphalt to be removed must be saw cut. A jackhammer can be used if a nice even cut is made. Wheel cutting is not an approved method unless approved by the City of Pacific Engineer in advance. Any deviation from this specification shall be in writing 48-hours before saw cutting takes place.
11. Additional asphalt may be required for removal by the City of Pacific Engineer or Inspector.
12. All vertical drop-offs within the traveled way will be backfilled each night.
13. Abutting edges and curbs must be thoroughly cleaned
14. All asphalt edging will be tacked prior to asphalting.
15. All asphalt patches must be a smooth transition. No bumps or high/low spots (Section 5-04.3(13)). Surface smoothness maximum variation in 10 feet parallel to the centerline is 1/8 inch and transverse 1/4 inch.
16. Sub grade will be compacted and tested prior to asphalting.
17. A minimum of 3-inch HMA CL 1/2-inch PG-64-22 asphalt patch to be compacted to 92 percent max rice density (Section 5-04.3(10)B).
18. All final joints and saw cuts to be sealed (Section 5-05.3(8)B) using a hot poured joint sealant (Section 9-04.2(1)). A preferred sealant is AR-4000.

19. On major streets where traffic congestion is a problem, the patch will be protected with a 1/4-inch steel plate until sufficiently cooled.
20. Call for a forms inspection before placing of concrete. Call (253)929-1110 to schedule.
21. No monolithic pours allowed per the City Engineer. The sidewalk, curb & gutter, driveways, driveway aprons, wheelchair ramps, etc. are to be individual pours and separated by a fabric expansion joint.
22. Protecting the concrete is the responsibility of the contractor. No graffiti, footprints, finishing blemishes, or other objectionable marks allowed. If any of this takes place, the section that is damaged will be replaced.
23. Concrete shall be a 5.5 sack mix with a 28-day strength of 3000 psi. Any deviation from this specification shall be in writing 48-hours before concrete is placed.
24. During the first 14-days of curing, the contractor must protect from freezing.
25. Curb/Gutter and sidewalk construction shall follow a true and uniform horizontal and vertical alignment.
26. The vertical and horizontal surfaces shall be a smooth broom finish with no detectable finishing blemishes, undulations, ripples, swells, waves, ruts, furrows, graffiti, or other objectionable marks. The end result shall be a neat and professionally finished appearance.
27. The edge finish adjacent to the expansion joint material shall be clean and free of excess slurry. The expansion joint material shall be trimmed to a level even with the adjacent concrete resulting in a neat and professionally finished appearance.
28. The City Engineer, in his sole discretion reserves the authority to order the removal of sections of curb/gutter and sidewalk that do not meet the workmanship and aesthetic standards of the City of Pacific.
29. Sections of newly constructed curb/gutter and sidewalk, that exhibit cracking following curing, shall be subject to removal and replacement.
30. Cracking resulting from sub-base failure or construction site damage shall be immediately removed and replaced to the nearest expansion joint.
31. Minor hair line stress cracks may, at the discretion of the Project Manager, be monitored and re-evaluated for possible removal at the end of the maintenance period.

STORM DRAINAGE NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. All storm drainage improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, engineer, and appropriate public agencies.
4. Storm drain pipe shall 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 shall conform to ASTM D 3034-73 SDR 35 for 4-inch thru 15-inch diameter PVC pipe, and shall conform to ASTM F 679 for 18-inch thru 27-inch diameter PVC pipe, with joints and gaskets conforming to ASTM D 3212 and ASTM F 477.
 - D. Ductile iron pipe conforming to the requirements of ANSI A21.51, and AWWA C 151, thickness class as approved by City Engineer.
 - E. Polyethylene smooth wall pipe per Advanced Drainage Systems (ADS) N-12, bell and spigot, constructed per WSDOT/APWA Standard Specifications 7-04. Note: This type of pipe will only be approved with the City's specific written approval. Approval shall be based on site specific conditions and if additional on-site inspection time for witnessing proper pipe installation can be scheduled by the City.
5. All pipes shall be suitable for use as a gravity drain conduit.
6. The Contractor shall be required to place metallic tape over all non-metallic pipes. The metallic tape shall be a minimum of 2 inches in width and placed continuously the entire length of the storm drain trench.
7. All trenches for storm drains shall be in accordance with the Section 7 of the current WSDOT Specifications for Roads, Bridges and Municipal Construction.
8. All fittings shall be of like material as the pipe furnished by the pipe supplier.
9. Where connections require "field verifications," connection points will be exposed by contractor and fittings verified prior to disruption of flow.
10. Catch basins shall conform to Type I, Type II, or the Inlet Type as defined in said APWA Standards Specifications and Standard Plans with flat top frame and grate.
11. All storm drainage structures, such as catch basins and manholes, not located within a traveled, paved roadway or concrete sidewalk, shall have locking lids. All drainage structures associated with a permanent detention facility shall have locking lids. All drainage structures located within a bike or walking path shall have locking lids.
12. All catch basins grates shall include the stamping "Outfall to Stream, Dump No Pollutants".

13. The cast iron frame may be placed flange down on adjustment blocks in lieu of precast collar. The installation of catch basins shall include final adjustment as may be required to finish grade. Installation within the paved roadway shall be per the City of Pacific Type I catch basin with 18-inch barrier curb detail unless specified as a thru-curb inlet.
14. Catch basins must be set to line grade using no more than two (2) adjustment rings.
15. Cast iron frame for Type I catch basin shall accommodate a 20-inch by 24-inch grate.
16. Catch basins at the Curb line shall be recessed 0.1 foot.
17. Special structures, oil/water separators, and outlet controls shall be installed per plans and manufacturers recommendations.
18. Minimum 1-foot separation between pipes in Type II catch basins.
19. All storm lines and catch basins will be high-velocity cleaned and pressure tested in accordance with Division 7 of the WSDOT/APWA Standard Specifications prior to paving in conformance with the WSDOT/APWA Standard Specifications. Hydrant flushing of lines is not an acceptable cleaning method.
20. All driveway culverts located within the Right-of-Way shall be of sufficient length to provide a minimum 3:1 slope from the edge of the driveway to the bottom of the ditch.
21. Clean-outs shall have cast iron cases.
22. Drainage outlets (Stub outs) shall be provided for each individual lot. Stub-outs shall conform to the following:
 - A. Each outlet shall be suitably located at the lowest elevation on the lot, so as to service all future roof downspouts, footing drains, driveways, yard drains, and any other surface or subsurface drains necessary to render lots suitable for their intended use. Each outlet shall have free-flowing, positive drainage to an approved storm water conveyance system or to an approved outfall location.
 - B. Minimum slope on roof and foundation drain stubs shall be 0.5 percent and have a minimum of 1 foot of cover. Roof drains and foundation drainpipes shall be constructed of PVC ASTM D3034 SDR 35, and ASTM F679.
 - C. Outlets on each lot shall be located with a section of PVC pipe marked "Storm" on the end of the pipe and shall extend 36 inches above the ground.
 - D. Drainage easements are required for drainage systems designed to convey flows through individual lots.
 - E. The Engineer/Contractor is responsible for coordinating the locations of all stub out conveyance lines with respect to utilities (e.g., Power, Gas, Telephone, Cable, etc.)
 - F. All individual stub outs shall be privately owned and maintained by the lot owner.
23. Overflow, spillways, gravel filter windows must be constructed per plans and specifications. No deviations. As-built for verification required.
24. Grass lined swale shall be constructed per the details provided. No deviations allowed. All swales must be operational before acceptance.

25. A low-pressure air test at 5 PSI for 15 minutes for sewer mains is required. 48-HOUR NOTICE REQUIRED. (Section 7-17.3(2)H).
26. Any permanent flow control facility used as a temporary settling basin shall be modified with the necessary erosion control measures and shall provide adequate storage capacity. If the facility is to function as an infiltration system, the temporary facility must be graded so that the bottom and sides are at least 3 feet above the final grade of the permanent facility.

WATER SYSTEM NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. All water system improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, engineer, and appropriate public agencies.
4. Water mains 4-inch diameter and larger will be ductile iron cement mortar-lined thickened. Materials are to conform to the latest revision of the following standards:
 - A. Ductile Iron Pipe design (AWWA C150/A21.50)
 - B. Ductile Iron Pipe manufacturing process (AWWA C151/A21.51)
 - C. Cement Mortar Lining (AWWA C104/A21.4)
 - D. Ductile Iron Pipe joints (AWWA C111/A21.11)
 - E. Ductile Iron fittings (AWWA C153/A21.53 and C110/A21.10)
5. Water Main Installation shall conform to the latest revision of Ductile Iron Pipe installation (AWWA C600)
6. Maintain a minimum 1-foot vertical separation and a 30-inch horizontal separation between the waterline and all other Utilities except Sanitary Sewer, which is to be a 10-foot horizontal separation. Waterline trench is not to be shared with other Utilities.
7. Trench excavation, bedding, and backfill for water mains shall be in accordance with section 7-10 of the current version of the WSDOT/APWA Standard Specifications and the *Pacific Development Standards* trench details.
8. Maximum length of open trench shall be 100 feet.
9. The waterline shall be fitted with a watertight plug at any anytime work is delayed or stopped and overnight. If newly installed waterline is contaminated with ground water, the entire length of pipe affected shall be thoroughly cleaned prior to installing additional pipe.
10. All pipe and services will be installed with continuous tracer tape installed 12 inches to 18 inches under the final ground surface. The marker will be plastic non-biodegradable, metal core, or backing marked water, which can be detected by a standard metal detector. Tape will be Terra Tape D or approved equal. In addition to the tracer tape, blue toning (tracer) wire will be installed over all pipe and services. Toning wire will be UL listed, Type UF, 14-gauge coated copper taped to the top of the pipe to prevent stretching and damage. The wire will be brought up and tied off at valve body or meter setter with the end of the wire accessible to hook up to a locator (2 feet of slack). All toning wire splices and connections 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 days prior to the test is required.

11. Water Valves shall conform to Ductile Iron Resilient Wedge Gate Valves (AWWA C515). Acceptable manufacturers: American Flow Control, Clow, Kennedy, M&H, Mueller, or City approved equal.
12. System valves will be operated by City employees only.
13. At any connection to an existing line where a new valve is not installed, the existing valve must be pressure tested to City standards by the contractor prior to connection. If an existing valve fails to pass the test, the contractor will make the necessary provisions to test the new line prior to connection to the existing system or install a new valve.
14. At any water main tap to existing city mains where the contractor encounters a coupling or existing assemblies, the contractor will provide a minimum of 18 inches of clearance from coupling or assemblies to edge of tapping sleeve.
15. Any connection to an asbestos cement (A/C) water main shall require the replacement of at least one length of A/C water main with ductile iron pipe per Standard Detail C1C.
16. No connection to the existing mains will be allowed except by means of an approved backflow prevention device prior to satisfactory flushing, testing, disinfections, and receipt of satisfactory bacteriological test results.
17. Any persons performing Hot Taps shall be approved in advance by the City of Pacific. Spears Taps, Inc. at (425)485-4764 is an acceptable companies.
18. Fire Hydrants shall conform to the latest revision of Dry Barrel Fire Hydrants (AWWA C502). Acceptable manufacturers: AVK, M&H "Reliant" #929, Mueller, or City approved equal.
19. Fire hydrants will be bagged until system is approved. Hydrants will be painted with Parker Paint Marathon Enamel Safety Yellow paint or equal. All chains between caps and hydrants shall be cut and removed.
20. Fire Hydrants shall be set vertical plumb with the pumper port facing the street.
21. Fire Hydrants shall be set as such that the breakaway joint is no more than 6 inches above and no less than 3 inches above the finished grade.
22. There shall be 5-foot minimum clearance around the fire hydrants.
23. Fire Hydrants shall have a 5-inch Storz Rigid Female Adapter with cap and connecting cable.
24. The water services to the property line from the main line shall be 1-inch minimum copper and shall be installed in accordance with Section 7-15 of the current version of the WSDOT/APWA Standard Specifications and the *Pacific Development Standards*.
25. Installation of Thrust Blocks shall conform to the City of Pacific Guidelines for Public Works Standards details, Thrust Block (TB). The Contractor shall use plastic sheeting to prevent contact between the concrete and the fittings. The City of Pacific Engineering Department shall inspect thrust Blocks prior to backfilling the trench.
26. The City will be given 10 working days' notice prior to scheduling a shutdown. The City of Pacific Water Section or City Inspector will perform the shutdown. Where connections require "field verification," connection points will be exposed by contractor

and fittings verified two working days prior to scheduling City crews to distribute shutdown notices. The City will notify customers involved or affected of the water service interruption 48 hours in advance.

27. The City of Pacific Engineering Department must be notified at least 48-hours prior to commencing construction and for inspection requests. Inspections shall include pipe installation, pipe bedding, bagging, thrust blocking, pressure testing and trench backfill.
28. The Contactor shall notify and coordinate with the City of Pacific Water Department prior to the start of construction and prior to any water shut off or turn on that will affect the water system.
 - A. Scheduled waterline shut downs: 72-hours notice required. Contact Jim Schunke at (253)929-1116 or (253)261-5044 for scheduling. Water Department personnel will operate distribution valves.
 - B. Emergency waterline shut downs: Contact Jim Schunke at (253) 929-1116 or (253) 261-5044 or on call public works personnel at (253) 333-4522. The Water Department will be notified.
29. All mains will be disinfected conforming to Disinfections (AWWA C651).
30. All lines will be pressure and water quality tested in the presence of and under the supervision of the City of Pacific in conformance with the Specification 7-09.3. The contractor shall furnish all labor, equipment, and material to disinfect, flush, and conduct a pressure test of the completed waterline(s).
31. Dechlorinization will be required of all disinfection water flushed from waterlines which cannot be conveyed to existing Sanitary Sewer Systems.

SANITARY SEWER CONSTRUCTION NOTES

1. See the City of Pacific Standard Notes on Sheet ____.
2. See the Construction Sequence on Sheet ____.
3. All sewer system improvements shall be constructed in accordance with these approved plans. Any deviations from these plans shall require approval from the owner, engineer, and appropriate public agencies.
4. All pipe and services will be installed with continuous tracer tape installed 12 inches to 18 inches below the proposed finished sub-grade. The marker will be plastic non-biodegradable metal core or backing, marked "sewer" that can be detected by a standard metal detector. Tape will be Terra Tape "D" or approved equal. The tape will be furnished and installed by the contractor.
5. 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. Toning wire will be UL listed, Type UF, 14-gauge copper taped to the top of the pipe to prevent movement during backfilling. The wire will be laid loosely enough to prevent stretching and damage. The wire will be wrapped to manhole or cleanout rings on gravity sewers. A 1-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 days prior to the test is required.
6. Bedding of the sewer main and compaction of the backfill material will be required.
7. All manholes or cleanouts outside the paved area will be installed with a concrete collar in accordance with Standard Plans.
8. After backfilling, but prior to paving, all mains and appurtenances will be inspected and approved by the City of Pacific Construction Inspector. Approval does not constitute final acceptance of the sewer line. The contractor will retain the responsibility to repair all deficiencies and failures revealed during all required testing for acceptance and through the duration of the warranty. It will be the contractor's responsibility to notify the City of Pacific for the required inspections. Any main or appurtenance backfilled prior to inspection will be re-excavated for inspection.
9. All lines will be high-velocity cleaned and subjected to a low-pressure air test pursuant to 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 under the direct supervision of the City. Immediately prior to television inspecting, enough water will be run down the line so it comes out the lower manhole and the line is flushed clean. Acceptance of the line will be made after the television inspection tape has been reviewed and approved by the inspector.

10. A vacuum test of all manholes in accordance with Pacific standards is also required. Testing will take place after all underground utilities are installed and compaction of the roadway sub-grade is completed.
11. Television inspection of existing lines shall be required when there are multiple sewer taps of existing mains for a single project.
12. All side sewers shall be extended to property lines. Pipe plugs will be required for side sewer if immediate connection is not to be made.
13. The new sanitary sewer line shall be plugged and not put into service until all lines have been cleaned, flushed, and tested. All sanitary lines shall be inspected by the City of Pacific and all testing shall be done in the presence of the City of Pacific Representative.
14. All PVC Sewer Pipe and fittings shall conform to and meet the requirements of the latest ASTM specifications D3034. Also,
 - A. Pipe and fittings shall meet Standard Dimension Ratio 35.
 - B. All sanitary sewer pipes shall bear the mark of the National Sanitation Foundation.
 - C. All pipes shall be suitable for use as a gravity sewer conduit.
 - D. Pipe shall have flexible joints.
15. All fittings and accessories shall be manufactured and furnished by the pipe supplier or be an approved equivalent and have bell and/or spigot configuration identical to that of the pipe. Manhole couplings corresponding to the size of the sewer pipe shall be used.
16. Six-inch PVC sanitary sewer pipe shall be used for side sewers. Side sewers will be constructed at a minimum slope of 2 percent at the locations shown on the plans and have a 6-inch test wye at the extremity, plugged and blocked for testing and future use. Side sewers wye shall be factory made with matched ends for rubber gasket fittings, no cut in tees shall be permitted. A side sewer grade that is less than 2 percent may be approved only by the Engineer and the City of Pacific upon written request.
17. The end of each sanitary sewer stub shall be marked with a pressure treated 2x4. It shall be placed at the flow line of the stub and extend 4 feet above finished grade. There shall be a permanent mark labeled "SEWER" with a depth to the flow line shown on the 2x4.
18. Rubber gasket shall be installed properly to avoid water infiltration into the manhole.
19. When connecting the pipe to manholes, use A-LOK flexible connector, KOR-NSEAL by NP, Inc., or approved equivalent. The pipe to manhole connections require flexible connectors; see WSDOT/APWA Specifications Section 7-05.3.
20. Pick holes shall be grouted from the inside and outside and are to be inspected prior to backfill of the manhole by the City Inspector.
21. Manhole frames and lids shall be sloped to conform to the street grades.
22. Tops of manholes within the Public Right-of-Ways shall not be adjusted to final grade until just prior to paving.

23. All manholes and clean-outs in unpaved areas shall include a concrete collar around the adjustment rings per the current Pacific standard detail ____, "Structure Adjustment and Perimeter Seal."
24. All manholes shall be protected from intrusion of rocks, gravel, water, and other debris during construction. The Contractor shall install, at all connections to existing downstream manholes, screens or plugs to prevent foreign material from entering existing sanitary sewer system. Screens or plugs shall remain in place throughout the duration of construction and shall be removed along with the collected debris at the time of final inspection and in the presence of a designated representative of the City of Pacific. Call (253)929-1110 to schedule an inspection. Allow 24-hours notice.
25. The flow channel inside each manhole shall be formed of cast-in-place Portland cement concrete. Channel shall have a semi-circular cross-section and smooth, uniform slope from inlet to outlet. Where three or more pipes are connected to one manhole, the flow channel shall be formed to smoothly direct flow from inlets to outlet.
26. Steps consisting of 1-inch diameter hot bent and galvanized deformed bars shall be installed at 1-foot centers.
27. All testing and connections to the existing mains shall be done in the presence of a designated representative of the City of Pacific. Call (253) 929-1110 to schedule an inspection. Allow 24-hours notice.
28. A low-pressure air test at 5 PSI for 15 minutes for sewer mains is required. Pretesting is required. Rescheduling a failed test may result in several days delay due to conflicts with other projects. Call (253) 929-1110 to schedule an inspection. Allow 24-hours notice.