

CITY OF INDEPENDENCE
Public Works Design Standards

Division 1

General Requirements

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GENERAL REQUIREMENTS

1.1 GENERAL

- a. These Public Works Design Standards will be cited routinely in the text as the "Standards" or "PWDS".
- b. Wherever specific supplementary standards are indicated (ie. ASTM C-150), it shall be understood to mean the latest revision thereof.
- c. Pronouns & Captions. In interpreting these Standards, it is understood that: (1) if the context so requires: (a) the singular pronoun shall be taken to mean and include the plural pronoun; (b) the masculine pronoun shall be taken to mean the feminine and the *gender neutral* pronoun as may be applicable; and (2) all captions used therein are intended solely for the convenience of reference and shall in no way limit any of the provisions of these Standards.
- d. These Standards shall apply to all improvements within existing and proposed public right-of-way and public utility easements, to all improvements to be maintained by the City, and to all infrastructure improvements for which the Municipal Code and/or the Development Code requires review and/or approval by the City. These Standards are to be guidelines for designers and developers in preparing their drawings and for City staff in reviewing drawings. Where minimum values are stated, greater values should be used whenever practical; where maximum values are stated, lesser values should be used whenever practical.
- e. Requests submitted for variances to these Standards shall be based on topography, right-of-way, geography or existing physical conditions which impose an unreasonable hardship on the applicant (*as determined by the Public Works Director*). Requests for variances must demonstrate (*to the satisfaction of the City*) that the proposed variance meets the intent of the standards and will not compromise safety, will not disproportionately impact other properties (*as determined by the City*), and will not cause an increase in maintenance by the City.
- f. PWCS. The City currently has physical standards for the construction of streets and related work, sanitary sewers, storm drains and structures and waterlines which cover the standard construction requirements for these facilities within the City of Independence (*Oregon Standard Specifications for Construction – OSSC (ODOT/APWA), subject to the material, equipment and provisions specified in these PWDS*). Standard Specifications are hereinafter referred to as Public Works Construction Standards (PWCS) and can be viewed at Independence City Hall or the Public Works Department, and can be purchased on-line through the link at: <https://5207--62.myuplinxstore.com/franchise/index.htm>.

- g. In the case of conflicts between the text of these design standards and the standard details, or between the provisions of these design standards and the PWCS, the more stringent as determined by the City Engineer and Public Works Director shall apply. Acceptable materials shall be as outlined in these Design Standards.
- h. All other utility improvements, including telephone, electrical power, gas and cable TV shall meet the current standards of the appropriate agency as well as City standards.
- i. Traffic Control Devices shall meet the standards of the current Manual on Uniform Traffic Control Devices, including Oregon amendments.
- j. All other work not covered by the above standards shall conform to the Oregon Standard Specifications for Construction – OSSC (ODOT/APWA), most recent edition.
- k. All applicant/developers are hereby notified that the requirements of the PWDS must be addressed during the design & construction of any improvements which are required due to land use decisions. This applies whether or not specific PWDS requirements are referenced during the land use approval process, noted in the land use findings or included in the land use approval conditions (*since land use approval conditions cannot incorporate or list every code or standard requirement that may be required for a particular project*).

PWDS are NOT Land Use Regulations. It is important to be aware that the PWDS requirements are not land use regulations (*similar to how the requirements of the Oregon Fire Code/OFC or building codes are not land use regulations*), and thus the PWDS do not directly impact the decision of whether to approve or deny any land use application, and do not directly control what level of infrastructure improvements are required as land use conditions of approval for any particular development. Approval or denial of land use decisions should be based on the land use regulations, even though land use conditions may reference the PWDS & OFC provisions in order to clarify the specifics about improvements which may be required (*ie. those improvements required in order to provide service to or mitigate impacts from the development, or when such references are intended to make the applicant aware of specific design/construction standards that must be addressed during the design/construction phase of the development*).

1.2 PURPOSE

- a. The purpose of these Standards (*PWDS & PWCS*) is to provide a consistent policy under which certain physical aspects of infrastructure and public utility design will be implemented. Most of the elements contained in this document are infrastructure and Public Works oriented and most are related to the development, land division and/or platting process.

However, it is intended that these PWDS apply to both public and private work designated and covered herein.

- b. These Standards cannot provide for all situations. They are intended to assist but not to substitute for competent work by design professionals. The Standards are also not intended to limit unreasonably any innovative or creative effort which could result in better quality, better cost savings, or both. Any proposed departure from the Standards will be judged on the likelihood that such variance will produce a compensating or comparable result, in every way adequate for the user and City resident.
- c. The objective is to develop Standards which will:
 - 1) be consistent with current City Ordinances, municipal code and/or development code.
 - 2) provide design guidance criteria to the private sector for the design of infrastructure and public improvements within the City of Independence.
 - 3) provide infrastructure and public utility improvements designed in a manner to allow economical future maintenance.
 - 4) Develop minimal franchise and/or private utility standards for systems which will impact or potentially impact public streets and/or public utility systems.

1.3 ENGINEERING POLICY

- a. The engineering policy of the City of Independence requires strict compliance with ORS 672 & other state rules for professional engineers, as administered by OSBEELS (*Oregon State Board of Examiners for Engineering and Land Surveying*). The following requirements shall be applicable to the evaluation and design of streets, grading plans, vehicular access & parking areas, sanitary sewers, storm drain systems (*including detention systems*), and water distribution and associated facilities.
 - 1) All engineering drawings, reports, or documents designated herein or intended to provide engineering design or engineering recommendations shall be prepared by a professional Civil Engineer registered in the State of Oregon, or by a subordinate employee under the engineer's direction, and shall be stamped with the engineer's seal (*and signed by the engineer for final documents*) to indicate responsibility for them and that they were prepared by or under the supervision and control of the licensed engineer (*the licensed engineer requirement may not apply to designs by franchise utility companies, unless otherwise required by OSBEELS*). Per OAR 820-025-0015, stamped engineered designs which are not final (*and which are not signed by the engineer*) shall be "marked as "preliminary", "not for construction", . . . or with some similar wording to indicate that the documents are not intended to represent the final work product of the [engineer]."
 - 2) It shall be the Design Engineer's responsibility to review any proposed extension, modification or improvement of infrastructure or a public utility system with the City prior to proceeding with final engineering and design work

to determine any special requirements or whether the proposal is permissible. A preliminary review and/or approval of the drawings for construction for any project does not in any way relieve the Design Engineer of his/her responsibility to meet all requirements of the City or the obligation to protect life, health and property of the public. The drawings for any project shall be revised or supplemented at any time it is determined that the full requirements of the City standards have not been met.

- 3) Detail Sheet Stamping. Per interpretations issued by the OSBEELS Professional Practices Committee (December 2016), the design engineer shall seal and sign drawing sheets containing standard details (*whether prepared by the City or other agencies*), since the details are incorporated into the larger design which is under the responsible charge of the design engineer. It shall be the Design Engineer's responsibility to review any and all standard details incorporated into the design (*whether prepared by the City or other agencies*), and verify that they are applicable to and appropriate for the proposed design.
- 4) Any engineer having submitted to the City false or inaccurate information of a material nature will be warned of their conduct, and the OSBEELS may also be advised.

1.4 DEFINITIONS AND TERMS

- a. Unless otherwise defined in these Standards, the following definitions, terms and abbreviations shall apply whenever used.
 - 1) ADA: Americans with Disabilities Act, including any amendments thereto, and all applicable federal rules, regulations and guidelines implementing the ADA, including but not limited to the current version of the Public Right-of-Way Accessibility Guidelines (PROWAG).
 - 2) As-built Drawings: Drawings prepared by the Design Engineer (*and reviewed by the city representative*) and revised, if necessary based on the City's review, to accurately show all as-built conditions and construction details.
 - 3) City: The City of Independence, Oregon.
 - 4) Construction drawings: Drawings prepared by a registered professional engineer, including site plans, plan and profile views of utilities, cross sections, detailed drawings, etc., or reproductions thereof, approved by the City Engineer, which show the location, character, dimensions and details for the work to be done.
 - 5) Definition of Words: Wherever, in these Standards, the words directed, required, permitted, ordered, designated or words of like importance are used, they shall be understood to mean the direction, requirement, permission, order or designation of the City Engineer and Public Works Director. Similarly, the

words approved, acceptable, satisfactory, shall mean approved by, acceptable to, or to the satisfaction of the Director.

- 6) Developer: The individual or individuals, partnership, business, firm, company or corporation named as applicant in a permit, a permit application, or agreement with the City, who undertakes development and/or construction of property and/or infrastructure within the jurisdiction of the City (*including their agents, employees, representative and/or contractors*). Also referred to as the development team. May be the same or different from the Owner.
- 7) Design Engineer: The engineer licensed by the State of Oregon as a Civil Engineer under whose direction plans, profiles and details for work are prepared and submitted to the City for review and approval.
- 8) Director: The director of the Public Works Department of the City of Independence or his/her authorized representative.
- 9) Dwelling Unit: A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, cooking, eating and sanitation.
- 10) Easement: Areas along the alignment of streets, sidewalks or utilities which are outside of a dedicated street right-of-way. Easements to the City shall be prepared on standard City easement forms granting (*to the City*) access & easement rights along the utility line or facility, and formalizing the terms and conditions of the easement, and which shall be recorded in the County records by the development team after review & approval by the City.
- 11) Equal: Whenever any material, article, device, product, or fixture is indicated or specified by proprietary name, by name of manufacturer, or by catalog number, such specifications shall be deemed to be used for the purpose of establishing a standard of quality and facilitating the description of the material or process desired. This procedure is not to be construed as eliminating from competition other products of equal or better quality by other manufacturers which meet the criteria in this paragraph, and shall be deemed to be followed by the words "or approved equal" unless otherwise indicated in the specifications, on the drawings or by City standards. The decision relative to equivalency will be by the Public Works Director or his/her designee, and shall be final. A proposed item of material or equipment will be considered an "or equal" when, in the exercise of reasonable judgment, the Public Works Director or his/her designee determines that; (1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics, and 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed project as a functioning whole, and 3) it has a proven record of performance and availability of responsive service, and 4) it will not materially increase anticipated maintenance or operating costs by the City or require stocking of

specialty tools, parts, equipment or materials not otherwise required, and 6) it is compatible and interchangeable with existing system components of the same type and function. Requests for review of “or equal” or “substitute” items shall be in writing, shall include all documentation for a complete review, and will not be accepted from anyone other than the Contractor performing the work.

- 12) Fire Chief: The chief officer of the local fire department or fire district serving the jurisdiction, or his/her authorized representative (OFC 202).
- 13) Fire Code Official: The fire chief or other designated authority charged with administration and enforcement of the Oregon Fire Code, or his/her authorized representative (OFC 202).
- 14) Fire Lane: A fire apparatus access road as defined in the Oregon Fire Code, including turnarounds where required (OFC 202).
- 15) Multiple Family Dwelling: A building or portion designed thereof for occupancy by two or more families, living independently of each other.
- 16) Manufacturer's Name: Any manufacturer's name, specification, catalog number, or type used herein is specified by make in order to establish the standard requirements of the City. Other equivalent makes will be considered for approval, providing they are equal with this established standard, as determined by the City.
- 17) Owner: Any individual, partnership, firm or corporation by whom the Design Engineer has been retained or who, as a property owner or representative of a property owner, is making arrangements with the City for development of property or infrastructure (*see also Developer*).
- 18) Person: Individual, firm, corporation, association, agency or other entity.
- 19) Plans: See Construction Drawings.
- 20) Preliminary Review: Review of the construction drawings by the City as outlined in these standards. All City comments and provisions of these design standards must be addressed prior to final review and approval for construction.
- 21) PROWAG: Public Right-of-Way Accessibility Guidelines, see ADA.
- 22) PWCS: Public Works Construction Standards, consisting of Oregon Standard Specifications for Construction (OSSC (ODOT/APWA)), subject to the material and equipment specified in these PWDS. See also PWDS 1.1.f.
- 23) PWDS: Independence Public Works Design Standards, consisting of this manual.

- 24) Residential User: The owner, lessee, or occupant of a single dwelling unit in one structure.
- 25) Right-of-Way: All land or interest therein which by deed, conveyance, agreement, easement, dedication, usage, or process of law is reserved for or dedicated to the use of the general public free of all encumbrances, within which the City, county or state shall have the exclusive right to install and maintain streets and public utilities.
- 26) Roadway: All of that portion of the right-of-way used, for vehicle movement, which exists between the curbs (*or the outside edge of shoulders where curbs do not exist*). See also Street.
- 27) Shall: The term is considered a mandatory obligation, and synonymous with the phrase “has a duty to” when referring to a capable actor, and with the word “must” when referring to a requirement regarding an inanimate object or a status.
- 28) Single Family Dwelling: Any residential building designed to house one family.
- 29) Standard Details: The drawings of structures or devices commonly used for infrastructure work within the City and referred to on the construction drawings. Also sometimes referenced as Standard Plans or Standard Drawings.
- 30) Street or Road: Any public highway, road, street, avenue, alley, way, easement or right-of-way to be used for vehicle movement.
- 31) Substantial Completion (*Public Works*): Substantial Completion is that degree of completion of the project’s facilities and operating systems sufficient to provide the City and the public the full time, uninterrupted, and continuous beneficial use and operation of the work, and after (i) all required functional and acceptance testing has been successfully completed; (ii) all final Public Works, building, plumbing, mechanical and electrical inspections required have been completed and any identified critical defective or incomplete work replaced or corrected; and (iii) all required record drawings and maintenance bonds have been submitted and accepted by the City. The terms “substantially complete” and “substantially completed” as applied to all or part of the work refer to Substantial Completion thereof.
- 32) Substantial Completion (*for building permits in residential subdivisions, under HB 2306*): Effective 1/1/2020, HB 2306 prevents a city from denying a building permit on the basis that the supporting infrastructure is not entirely completed in a subdivision. If a residential subdivision is built, the city must have a process to allow the builder to seek building permits upon “*substantial completion*” of the infrastructure required as a condition of development.

As defined in HB 2306, “*Substantial completion*” means the city, county or other appropriate public body has inspected, tested and found acceptable

under applicable code requirements, unless the parties agree to a lower standard: (A) The water supply system; (B) The fire hydrant system; (C) The sewage disposal system; (D) The storm water drainage system, excepting any landscaping requirements that are part of the system; (E) The curbs; (F) The demarcating of street signs acceptable for emergency responders; and (G) The roads necessary for access by emergency vehicles.”

Per HB 2306 also allows the City to require that if all improvements are not complete, *“The developer, declarant or owner, to secure the completion of the remaining public improvements included as conditions of development for the residential subdivision: (A) Obtains and maintains a bond; or (B) Undertakes an alternative form of financial guarantee, if any, that is acceptable to, but may not be required by, the city or county.”*

Also per HB 2306, a city may decline to issue the certificate of occupancy *“for any residential dwellings if all conditions of development are not fully completed or the conditions for the release of the bond are not fulfilled.”*

- 33) Substitute: If in the sole discretion of the Public Works Director or his/her designee, an item of material or equipment proposed by the Contractor does not qualify as an “or equal” item as defined above, or requires a change to the design or to the configuration of the project in order to be utilized, it will be considered as a proposed “substitute”. The decision relative to acceptability of substitute items will be by the Public Works Director or his/her designee, and shall be final. In addition to the review criteria for “equal” items, the written request for review of a substitute item shall document whether use of the proposed substitute item will require any changes to adapt the design to the proposed substitute item (*and to what extent*), and shall identify the timeframe required to complete such design changes, and that there will not be any cost or other impact to the City due to any such required design changes.
- 34) Survey Cut Sheets: Sheets of tabulated survey data, indicating stationing, structures, fittings, angle points, beginning of curve, points on curve, end of curves, staking offset, various elevations and offset utility cuts.
- 35) Traveled Way: That portion of the roadway for the movement of vehicles, exclusive of shoulder and auxiliary lanes.
- 36) UGB: Urban Growth Boundary.

1.5 LOCATION OF UTILITIES WITHIN RIGHT-OF-WAY OR EASEMENT

- a. The standard details indicate the general required location for each utility within the public right-of-way.
- b. In general, new franchise utilities are to be installed within street frontage PUEs where such easements exist or are proposed in conjunction with the development or project (*unless otherwise approved by the Public Works Director on a case-by-case basis*).
- c. General Separation Requirements. Installation of franchise or private utilities in a common trench with public water, sanitary sewer or storm drain mainlines is prohibited.

- 1) Horizontal Separation. Unless otherwise approved by the Public Works Director and the City Engineer, a minimum of 5 feet of horizontal separation must be maintained between City utilities (*ie. mainlines, as well as service laterals within the ROW or City easements*) and private or franchise utilities except at crossings, as well as between fire service lines and public, private or franchise utilities.

Separation between water service lines or fire service lines and sanitary sewer service lines located within a public right-of-way or within a City utility easement shall be a minimum of 5 feet.

Note: Once the water, sewer and/or storm service lines exit the road right-of-way or are outside of the City utility easement limits, separation may be reduced to that allowed by the OPSC or other applicable regulations.

- 2) Vertical Separation. Unless otherwise required by the Public Works Director and the City Engineer, a minimum of 6-inches of vertical separation must be maintained between City utilities (*ie. mainlines, as well as service laterals within the ROW or City easements*) and private or franchise utilities at crossings, as well as between fire service lines and public, private or franchise utilities. Greater vertical separation is required between sanitary sewer pipelines & potable pipelines, as summarized elsewhere in these standards.
- d. Franchise Utility Limitations in City Easements. Franchise utilities or private utilities shall not be placed in City utility (*ie. water, sewer or storm*) easements, unless specifically directed in writing to do so by the Public Works Director, subject to separation requirements in excess of minimums as dictated by Public Works Director.
 - e. Franchise utility plans shall be submitted to Public Works Director and the City Engineer for review prior to installation. All franchise utility street crossings shall be installed at right angles to the street centerline, and all crossings of water, sewer or storm mainlines or service lines/laterals shall be as close to perpendicular as feasible.
 - 1) Plowing In of Utilities Prohibited in ROW or City Easements. Use of

cable/conduit plowing for installation of franchise or private utilities within public right-of-ways or City utility easements is prohibited, unless specifically authorized by the Public Works Director on a case-by-case basis. Any such authorization shall be based on a demonstration by the applicant that there are no existing City or franchise utilities crossing the proposed plow alignment, or within 10 feet parallel with the proposed plow alignment.

- f. Utility service companies proposing to install major utility systems larger than typically required to serve local users and which cannot conveniently be relocated in the future will be required to prepare detailed drawings showing how the proposed system can be installed within the right-of-way without conflicting with existing or proposed City utilities. Drawing requirements may include but not be limited to plan and profile of proposed systems based on a detailed topographic survey.
- g. Utility/Infrastructure Modifications Required Due to Changes on Private Property.
 - 1) If changes are made to private property which requires modifications to and/or relocation of City utilities/infrastructure which is installed on private property (*ie. changes including but not limited to changes in finish grade, changes in surface type, change in use of the property, construction of structures, etc.*), such modifications and/or relocation shall be completed by the property owner or Developer at their sole expense, as directed by the City.
 - 2) When modifications to and/or relocation of City utilities/infrastructure are required due to changes on private property, such modifications and/or relocation shall comply with current City standards, and shall be reviewed and approved in accordance with these PWDS.

1.6 PROVIDING FOR NEW & FUTURE DEVELOPMENT

- a. All public improvements shall be designed as a logical part of the development of the surrounding area, as required or approved by the City Engineer and Public Works Director.
- b. Storm drain systems and sanitary sewers shall be sized to accommodate the entire drainage basin which they will ultimately serve.
- c. To & Through. Utilities and street improvements shall be extended to the boundaries of the development (*ie. to and through*) so as to provide for future extensions to the adjoining areas and prevent adjoining properties from becoming landlocked.

In the case of utilities, this shall also include extension to the far side of streets fronting or adjacent to the development as required to avoid work within or under these streets in the future.

Where existing roadway improvements do not extend to the proposed development or the existing roadways to the proposed development are not adequate to serve the

development or do not meet current City standards, the developer may be required to improve the roadways to the development, at the developer's expense.

- d. Master Plan Sizing/Sizing for Future Growth. The City may require over-sizing of utility lines to accommodate future growth of the City. Water, sewer and storm drain mainlines shall be sized to comply with recommendations in the applicable master plan documents or maps.
- e. Upgrading Existing Utilities. Where existing City utility lines do not adjoin the proposed development or the capacity of existing lines is inadequate, or are smaller than the minimum size allowed under the PWDS, or where the size does not match the applicable utility master plan documents or maps, the developer will be required to extend new utility lines to the development as necessary, and extend them through the property or to the end of the property frontage as required to provide for service to adjacent properties, at the developer's expense.
- f. Connection of Existing Utilities. Existing City utilities crossed, intercepted by or in the vicinity of new utility lines or facilities shall be connected to the new City utility system at locations as required by the City Engineer and Public Works Director. Existing City utility lines which are parallel with, or which are replaced or superseded by the new utility lines (*as determined by the City*), shall be abandoned or removed as part of the project (*and existing facilities or structures served by the abandoned lines shall be connected to the new system as applicable*), as required by the City Engineer and Public Works Director.
- g. SDC Credits & Oversizing Reimbursement, etc.
 - 1) The requirement by City standards that offsite or oversized street and/or offsite or oversized utility improvements must be completed "at the developer's expense" does not preclude the developer from applying under any SDC credit, oversizing reimbursement or reimbursement district procedures which may be authorized by the City Council or otherwise provided for by City code.

However, applications for any reimbursements via SDC credits, oversizing reimbursements, reimbursement districts or other means shall be the sole responsibility of the developer, and the developer shall not rely on any such applications or verbal indications by any parties until any such applications have been approved in writing by the applicable decision making authority.

The developer is hereby put on notice that approvals regarding any credit or reimbursement eligible infrastructure improvements associated with this project should be formalized with the applicable decision making authority prior to issuance of Public Works permit(s). Any other approach taken or sequence followed shall be at the developer's sole risk.

- 2) Unless otherwise explicitly authorized by the City Council under the

applicable provisions of the Municipal Code, such credits or reimbursement shall be limited to the actual documented material cost difference between the improvement actually constructed and minimum improvement otherwise required under the applicable City code or standards.

1.7 TIME LIMITS FROM DRAWING APPROVAL TO CONSTRUCTION

- a. The Developer shall obtain a construction permit and begin construction within six (6) months from the time the construction drawings are approved by the City Engineer. If construction does not begin within this period, the approvals of the construction drawings shall be null and void. Renewal of the approval for the construction drawings may result in additional conditions to update standard details, meet new standards, changed conditions or new information discovered since the original approval.

1.8 PHASED DEVELOPMENT

- a. In the case of a development approved to be constructed in phases, the construction drawings and infrastructure constructed for each phase shall be capable of standing alone.
- b. Approval by the City of construction drawings for each phase of a phased development shall be independent of the approval for all other phases.
- c. The intent of these requirements is that the construction drawing review requirements, and the time limits between approval of the construction drawings by the City and the time by which construction begins, shall apply to each phase independently.
 - 1) Construction drawings shall be subject to the PWDS & standard details, specifications, policies and procedures, construction drawing review, and permit fees of the Public Works Department in effect at the time the construction drawings are approved for construction (*ie. each phase shall be subject to the standards in effect at the time each such phase is ready for permit & start of construction*).
 - 2) Any updates to the PWDS and/or standard details that occurs between phases of a development shall apply to all subsequent phases.

1.9 REVIEW PROCEDURE

- a. Construction drawings (*plans*) and other engineering documents shall be submitted for review and approval by Public Works Director and/or the City Engineer prior to issuance of permits required by these Standards. Detailed provisions covering the review procedures and permitting requirements for street, grading, site and utility construction are contained in Appendix G of these standards. The following is an overview of these requirements.

- b. Pre-design Conference: The developer and developer's engineer are required to schedule a meeting with the Public Works Director and the City Engineer after land use approval (*see also PWDS G.2.e*) and prior to submitting design drawings of the proposed or required improvements for detailed review by Public Works.
- 1) A minimum of 5 working days prior to the predesign meeting, it shall be the responsibility of the developer or the developer's engineer to provide the City Engineer with copies of the following:
 - a) Base maps and topographic surveys showing existing streets and utilities within and adjacent to the property, and along proposed and/or required utility & infrastructure alignments (*on-site and offsite, limits as required by the PWDS*), and;
 - b) A plan or narrative summary detailing how each of the planning conditions of approval (*ie. land use conditions*) will be satisfied (*as applicable*), and;
 - c) Scaled plan view drawings showing existing and proposed lot layouts (*sizes and dimensions*), proposed and/or required street, sidewalk and/or utility (*water/sewer/storm*) alignments and improvement limits and conceptual layouts, existing grade contours and designation of where significant cuts or fills will be required, general alignment of any proposed retaining walls, limits of proposed or required right-of-way dedications and easements (*on-site and offsite, addressing the requirements of PWDS, the development code, planning conditions of approval, and known agency requirements*), and;
 - d) Preliminary profiles or invert/slope information along gravity sewer and storm alignments (*including proposed rim elevations for all manholes, catch basins, & other structures*), demonstrating the ability to meet the depth and slope requirements of the PWDS, and;
 - e) Verification that the elevations shown are based on the vertical datum specified in the PWDS, as well as information on the drawings showing the location and limits of any flood plain or wetlands within the development or along offsite street/utility alignments (*as well as information on the status of any required wetland permits*), and;
 - f) List of (*and justification for*) any known variances to the PWDS requirements which will be necessary based on the preliminary layout, street and utility drawings required above, and;
 - g) A current title report(s) covering all property where utility construction will occur (*which includes a list of all existing easements, restrictions, and other encumbrances, including copies of deeds, easements or other restrictive documents referenced in that report*) [a pdf copy of each title

report with embedded hyperlinks to the referenced documents may be provided in lieu of a hard copy], and;

- h) A geotechnical report is typically required for sites with existing or proposed fills,
 - i) Other information requested by the Public Works Director or the City Engineer.
- c. Construction Drawings for Review: *After the pre-design meeting*, for single family residential developments, three (3) sets of complete full size construction drawings (*addressing all issues noted in the pre-design meeting*) shall be submitted to the City for preliminary review (*or provide full size pdf copies of the construction drawings and all associated documentation for review*).

For commercial, industrial and multifamily residential developments, four (4) sets of complete full size construction drawings (*addressing all issues noted in the pre-design meeting*) shall be submitted to the City for preliminary review (*or provide full size pdf copies of the construction drawings and all associated documentation for review*).

Submittal requirements are as outlined herein, and shall include a unit price engineer's estimate acceptable to the City Engineer and any required review fees (*see also PWDS G.7*). Incomplete submittals will be returned without review.

- d. Review Comments, Resubmittals:
- 1) Upon completion of the preliminary review, the City will return one (1) set of drawings outlining the required revisions (*including redline drawings, a review letter or memo, or email as applicable*).
 - 2) In order to be entitled to further review, the applicant's engineer must address each comment of the prior review(s), and make all required corrections. All resubmittals and responses to comments must appear throughout to be a bona fide attempt to result in complete drawings fully conforming to City standards.
 - 3) Return without Review. The City reserves the right to return, without review, revised drawings and/or submittals which have not been updated to address all previous review comments.
 - 4) Resubmittals shall consists of a minimum of three (3) sets of full size drawings for single family residential developments, and a minimum of four (4) sets of full size drawings for commercial, industrial and multifamily residential developments (*or provide full size pdf copies of the construction drawings and all associated documentation for follow-up review*).
- e. Franchise Utility Coordination by Developer's Engineer. Once the preliminary review has been completed by the City and required revisions made, the Developer's engineer shall circulate the drawings to all utility service companies within the City, and bring

any conflicts to the attention of the City Engineer and Public Works Director. Prior to installation of any franchise utilities, all proposed drawings from utility service companies must be provided to the City for review.

- f. Coordination of Other Agency Approvals by Developer's Engineer. The Developer's engineer shall submit the drawings to all other agencies with jurisdiction as applicable, and bring any conflicts to the attention of the City Engineer and Public Works Director. Prior to final City approval of the construction drawings, approvals from other agencies with jurisdiction must also be received where applicable, including but not limited to the Oregon Health Authority – Drinking Water Services (OHA-DWS), Department of Environmental Quality (DEQ), Oregon Department of Transportation (ODOT), Polk County, fire districts and railroads wherein each has jurisdiction.
- g. The applicant is responsible for the coordination with the various utilities and agencies during design and construction. The utilities and agencies may include those shown in the Appendix.
- h. Upon final approval of the drawings for a Type B permit, submit the minimum number of copies of the final drawings to the City Engineer to be stamped as approved for construction, as required in Appendix G. Additional sets may be submitted for approval stamping at the developer's option.
 - 1) No changes shall be made between the final verification set of drawings reviewed by the City and the drawing sets submitted to the City for approval stamping, without the express written approval from the Public Works Director & the City Engineer.
 - a) Any unauthorized changes introduced into the final drawings submitted for approval stamping will invalidate the final drawing approval (*regardless of whether or not the City Engineer or Public Works Director have signed the drawings as approved*).

If unauthorized changes are subsequently discovered, a stop work order will be issued until the issue is resolved.
 - 2) The development team may make additional copies of the stamped approved plans for dispersal to their team members as applicable.
- i. Prior to issuance of the Public Works street or utility construction permits, the Developer shall provide the City with the following:
 - 1) Copy of an approved (*by City Attorney*) Developer/City Construction Agreement signed and notarized by the Developer, the Developer's engineer and the Developer's prime contractor.
 - 2) Any required permit fees.

- 3) Recorded copies of all required off-site easements (*with exhibit maps*) and off-site right-of-way dedications, as well as on-site easements and on-site right-of-way dedications, and any recorded maintenance agreements required by City standards, shall be submitted before construction permits are issued, with the following exception.
 - a) For subdivisions or partitions where all public utilities will be constructed prior to the recording of a final plat, the execution and recording of the on-site easement documents and on-site right-of-way dedications, as well as recorded agreements relating to on-site or off-site improvements, can be done in conjunction with the final plat.
 - b) If the Public Works Director, at his/her sole discretion, approves a request by the development team to split the City Public Works construction permits into segments, so that the certain work can be commenced while the detailed civil/site/utility construction drawings for the remainder of the improvements (*offsite or onsite*) are completed and reviewed, such split permits shall not be issued until after any identified offsite easements have been acquired by the development team, and recorded copies of the easements have been provided to the City.
- 4) All easements documents (*as well as ROW dedications, easement quit-claim deeds, or similar documents*) shall include a legal description and a “to-scale” exhibit map (containing the information required under PWDS 1.11), and easements to the City shall use the City’s standard form. Legal descriptions and exhibit maps shall be submitted for review and approval by City Public Works prior to recording.
- 5) Proposed Construction Schedule.
- 6) Certificates of insurance, minimum limits as outlined in the Appendix. City of Independence and City Engineer shall be covered as additional insured.
- 7) Evidence of Worker’s Compensation coverage from contractor performing the work.
- 8) Any required Construction Deferral/Waiver of Remonstrance agreements.
- 9) Any required performance bonds.
- 10) Other submittals specific to this project, including any required approvals from applicable state agencies, such as DEQ (*sewer & 1200C erosion control as applicable*), OHA-DWS (*water as applicable*), DSL, ODOT, etc. The City reserves the right to require evidence that any and all such required approvals have been received (*and copies provided to the City as applicable*) prior to issuing final approval of the construction drawings and/or issuing a construction

permit.

- j. Approval of plans by the City Engineer or Public Works Director for issuance of a City Public Works street/site/utility construction permit does not relieve the developer, contractor or engineer from obtaining any and all reviews and permits required under the building, plumbing or electrical codes that any portions of the work may be subject to, or from any requirements under County, ODOT or other agency permits or approvals required for the project.

1.10 CONSTRUCTION DRAWING SUBMITTAL REQUIREMENTS

- a. Survey: *All topographic surveys shall be based from an official benchmark acceptable to the City, and be based on the NAVD 1988 datum to match the FEMA flood map elevations. Existing elevation benchmarks that are based on the NGVD 1929 datum shall utilize the appropriate conversion factor to convert to the NAVD 1988 datum. All temporary benchmarks for construction purposes are to be based off accepted City benchmarks.*

Based on the NOAA VertCon website, the current conversion (*for this area*) from 1988 to 1929 datum is about 3.356 feet – see http://www.ngs.noaa.gov/cgi-bin/VERTCON/vert_con.prl for specific conversions by location.

****All designs subject to a Type B Public Works Permit shall be based off of a complete topographic survey of the entire project site, adjacent right-of-ways, areas adjacent to the project site and outside of adjacent to right-of-ways as necessary to provide all design elements required by these PWDS, and all offsite areas where improvements are proposed or required, including but not limited to the following.**

- 1) ****Surface features, including complete & accurate topographic information, extended to the full limits required by these PWDS.**
 - 2) ****Subsurface features.**
 - 3) ****Existing utilities (*public and private*) within and adjacent to the project site and/or limits of improvements.**
 - 4) ****Property lines & all survey monuments within or adjacent to the limits of the required topographic survey.**
 - 5) ****Right-of-way lines & centerline monuments.**
- b. Drawing Submittal: The drawing submittal shall include the following as applicable unless otherwise approved by the City Engineer. The following is a general overview of drawing requirements, but is not intended to be exclusive. All requirements of the individual divisions of the standards shall be satisfied.

Since projects subject to a Type B Public Works Construction Permit vary greatly in size and complexity, not all provisions in this section will apply to all projects. For instance, small projects in improved areas which do not involve any street

improvements or extensions of water, sewer or storm drain mainlines will not need to provide profiles for these facilities. To assist the design engineer, the minimum elements required of all designs subject to a Type B Public Works construction permit are designated as summarized in the sentence below.

****The elements in this section 1.10 which are marked by an (**) are required to be included on the drawings for all projects subject to a Type B Public Works construction permit (see PWDS G.5).** All other elements not so designated are only required if the project involves improvements or infrastructure referenced in the non-designated paragraphs or sentences. If there are questions due to the unusual nature of a project, these should be discussed with the Public Works Director and City Engineer at the predesign conference (PWDS 1.9.b).

- 1) ****Drawing Sheet Size.** Construction drawings shall be submitted on 22" x 34" blackline sheets unless otherwise approved by the City Engineer.
 - a) Drawing layouts shall be configured to provide adequate blank space around the sheet perimeter to allow full size and half size drawings to be printed on standard printers/plotters without cutting off any text or images, and to allow the entire border to be shown.
 - b) All drawings submitted for review and/or approval shall be stapled and bound into sets (*unless pdf submittals are allowed by Public Works Director & the City Engineer*).
- 2) ****City plan review fees as required** (*drawing review comments or other review feedback will not be provided prior to receiving any such required review fees*).
- 3) ****Variance/Deviation Summary Required.** A written summary of all deviations from the PWDS requirements, and written justification for any variance requests (*see section 1.12*). It is the responsibility of the design engineer to submit a written request for any proposed deviations or variances from City standards (*see PWDS 1.12.a.3*).
- 4) ****Cover Sheet** (*with all information required under PWDS 1.10.d*)
- 5) ****Overall drainage, utility and street/site lighting plan.**
- 6) Site grading plan where applicable.
- 7) Site layout & dimensioning plan with complete callouts and/or labels, including property dimensions, all parking areas, access driveways, fire lanes, ADA compliant pedestrian access routes, as well as building locations, separations & setbacks, etc., as well as other applicable information.
- 8) **Fire Access Plan.** Fire vehicle access plan as required to demonstrate compliance with OFC fire apparatus access requirements (*commercial, industrial, public, parking lot, private street, common driveway, flaglot, MHP,*

RV park, PUD, etc.), as well as information showing the access route around the building exterior as may be required by the Fire Code Official.

- 9) Plan and profile for the following public utilities:
 - a) Streets
 - b) Water as specified
 - c) Sanitary sewers
 - d) Storm drains
- 10) ****Erosion control plans** (*reflecting erosion control measures during construction, and also reflecting a post construction site runoff plan as required by general City or County stormwater permits, or by project DEQ stormwater or water quality permits*).
- 11) ****Details shall be Included on Drawing Sets.** Standard details shall be included on the construction drawing sheets. Details shall be placed in numerical order on the detail sheets, for ease of reference during construction.
- 12) ****Stamped storm drainage calculations, including storm drainage basin maps.**
- 13) **Geotechnical Report.** A geotechnical report for the development site and other impacted properties is required for sites with (a) any existing or proposed fills, (b) existing slopes steeper than 3H:1V, (c) existing or proposed retaining walls on the development property or on contiguous properties, (d) if stormwater infiltration is proposed, or (e) where there are other geotechnical concerns identified by the City Engineer or the Public Works Director.
- 14) **Title Report.** ****A current title report which includes a list of all existing easements, restrictions, and other encumbrances on each property where construction will occur, including full copies of deeds, easements or other restrictive documents referenced in the title report (*a pdf copy of each title report with embedded hyperlinks to the referenced documents may be provided in lieu of hard copies*).**
- 15) ****Recorded copies of all easements and right-of-way dedications required in conjunction with the project, with the exception noted under PWDS 1.9.i.3 for subdivisions or partitions where all public utilities will be constructed prior to the recording of a final plat. Easements shall be worded such that no trees, permanent structures or improvements including parallel fences or parallel utilities shall be placed or constructed on the easement. Easements shall be a constant width between manholes, valves or other in-line structures, unless otherwise required by the Public Works Director and/or the City Engineer (*ie. for example, where required to avoid leaving a sliver of property between the easement boundary and adjacent property lines or right-of-ways*). Easement**

width shall be based on the deepest portion of the line between such structures. See the Appendix for standard easement forms.

- 16) ****Proposed utility plans from all franchise utilities (*final review*).**
- 17) **Cost Estimate. ****Engineer's unit price construction cost estimate acceptable to the City Engineer or unit price bid results (*estimate to be submitted with initial review drawings and shall be updated as applicable when final review drawings are provided*).** Cost estimates shall include all work covered under the PWDS (*excluding work covered by buildings permits for structures*). In addition to grading, streets, water/sanitary sewer/storm drainage, driveways, parking, etc. to be constructed with the project, estimates shall include line items for street lighting and franchise utility trenching & conduit, as well as trenching & installation of street lighting conduits, junction boxes and pole bases as applicable.**
- 18) **Design Vehicle Turning Radius. For all developments (*other than single family subdivisions and/or partitions conforming with OFC requirements*), provide a summary of the largest design vehicles (*including emergency/fire vehicles*) which will need to access the development (*including vehicle size, dimensions & turning radius*), as well an exhibit showing turning-radius wheel-path templates for the design vehicle (*auto-turn or equivalent*).**
 - a) The development team shall be responsible to coordinate with the Fire Code Official regarding the size and turning radius of the largest emergency/fire vehicle which will need to access the site, and provide this information to the Public Works Director and City Engineer in conjunction with drawings submitted for review.
- 19) The submittal may also be required to include a traffic study and a traffic control plan.
- 20) The development team is responsible for submitting construction drawings & associated plans to other agencies with jurisdiction as may be required, in the format required by those other agencies.

c. **General**

- 1) ****A title block shall appear on each sheet of the drawing set and shall be placed in the lower right-hand corner of the sheet, across the bottom edge of the sheet or across the right-hand edge of the sheet. The title block shall include the name of the project, the sheet title and number, the name of the engineering firm, engineer's stamp (*either signed by the engineer, or marked as preliminary as noted under PWDS 1.3.a.1*), date and revision blocks. Revision blocks shall be filled in on each drawing sheet containing revisions from previously submitted or reviewed drawings.**
- 2) ****North arrows (*true north and plan north where applicable*) shall be shown on**

each sheet containing plan views and adjacent to any other drawing which is not oriented the same as other drawings on the sheet.

- 3) Allowable Scales. **The scale shall be 1"=10', 20', 40' or 50' horizontal and 1"=2', 4' or 5' vertical for all drawings except structural or mechanical drawings. The scale of corresponding plan views and profiles shall be the same.
 - a) **In cases where streets or public utilities exist or will be reconstructed, plan view scales shall not exceed 1" = 20'.**
- 4) **Each plan, profile and detail shall be labeled under the drawing. The horizontal & vertical scale for the plan, profile, or detail shall be noted under the title. Details not drawn to scale shall be so noted.
- 5) **All detail drawings, including standard detail drawings, shall be included on the drawing sheets.
- 6) **A complete legend of all symbols used shall be provided at the front of each drawing set or on the appropriate pages. In general, existing utilities shall be shown with a lighter line weight than proposed utilities.
- 7) **Letter size shall not be smaller than 0.10-inch high (*to allow text on half size drawings to be legible & readable*).

d. Cover Sheet

- 1) The first sheet (*Cover Sheet*) of all drawing sets shall include the following as a minimum:
 - a) **Project name.
 - b) **Design Engineer's name, address, telephone and fax number, and email address/website.
 - c) **Developer's name, address and telephone number, and email address & website.
 - d) **Vicinity Maps showing the location of the project in respect to the nearest major street intersection and a minimum of 500 feet around the site.
 - e) **Legend including all symbols and line types used on the construction drawings. Where there is insufficient room on the cover sheet, the legend can be included on a subsequent sheet.
 - f) **General construction notes matching format and content of notes in the Appendix. Where there is insufficient room on the cover sheet, the notes can be included on a subsequent sheet.

- g) **Sheet index located near lower right corner.
 - h) Infrastructure Summary Table. Include a summary table listing the number of lineal feet of new public streets and public mainline utilities to be constructed. Identify the length of new streets and/or utilities under County or ODOT jurisdiction separately from those under City jurisdiction. Do not include existing streets or utilities that are being replaced as part of the project with the same length, or private streets or utilities. List the size and type (*domestic, irrigation, etc.*) of all water meters proposed. Do not include length of sewer or storm service laterals.
 - i) Land Use Docket Number. **The City Planning Department file or docket number shall be listed for projects which required land use approval.
- e. **Overall Drainage, Utility and Street/Site Lighting Plan.
- 1) The overall drainage and utility plan shall show the following as a minimum:
 - a) **The location and elevation of a National Geodetic Survey, United States Geological Survey, State Highway, Polk County or City of Independence bench mark which the elevations shown are based shall be shown or noted. Temporary bench marks on or near the project site shall also be shown.
 - b) **Right-of-way lines, property lines, easement lines (*including those outside the project but intersecting or within 150 feet of the project boundaries*).
 - (1) *This distance can be reduced with written approval from the Public Works Director, but in all cases shall extend to the far side of right-of-ways and show property lines and improvements on the far side of the street along the entire property frontage, as well as showing enough of the adjacent properties to clearly illustrate drainage patterns, setbacks and utility issues.*
 - c) **Show (& list the recording reference numbers of) all existing easements affecting the project (*on-site & off-site*), and provide callouts with blanks for the proposed new easements (*the recording references for proposed easements are to be inserted at the as-built stage*).
 - d) **Existing and proposed streets, curbs, sidewalks, handicap ramps and driveways within the project and within 150 feet of the project boundaries (*see exception allowed under 1.10.e.1.b.1 above*).
 - e) **Existing and proposed sanitary sewers, storm drains, waterlines and

appurtenances within the project and within 150 feet of the project boundaries (*see exception allowed under 1.10.e.1.b.1 above*).

- f) **Existing franchise and private utilities within the project and within 150 feet of the project boundaries (*see exception allowed under 1.10.e.1.b.1 above*).
- g) **Lot or parcel numbers, street names and other identifying labels (*including tax lot and address numbers for all existing properties shown*). New street names are subject to the approval of the City.
- h) **Location and description of existing survey monuments, including but not limited to street monuments, property monuments, section corners, quarter corners and donation land claim corners within or adjacent to the limits of the work area.
- i) **Public and franchise/private utilities and other facilities to be relocated.
- j) Street light and site/parking light locations based on City spacing standards or a photometric design acceptable to the City, subject to City approval for location and maximum spacing (*see PWDS 2.28.j & 2.32*).
- k) Methodology proposed for individual lot drainage. Direction of drainage arrows and the following letter legend shall be used:

Symbol	Lot drains to:
C	Curb
P	Piped Storm Drain
S	Subsurface Disposal
→	Flow Direction

- l) The location of all curb weepholes shall be shown unless otherwise clearly defined or noted on the drawings.
- m) **Existing drainage patterns within the project and within 150 feet of the project boundaries (*see exception allowed under 1.10.e.1.b.1 above*).
- n) Floodplain, floodway and wetland boundaries, including floodplain elevation with FEMA map reference.

f. Site Layout & Dimensioning Plans & Grading Plans

- 1) The site layout & dimensioning plans shall show property dimensions, all parking lot and site access improvements and dimensions, including all vehicular & pedestrian access routes (*including fire lanes*), curbs, as well as building locations, separations & setbacks, etc., as well as other applicable information.
 - a) All compact parking spaces shall be identified on the drawings, and noted to be permanently labeled (*signs or durable pavement markings*).
 - b) Parking lot drawings shall identify which parking spaces are designated for service by the EV charging infrastructure (*required or proposed*), as well as showing / dimensioning the alignment for the required conduit to serve the parking spaces identified for EV charging.
- 2) A grading plan is required for subdivisions, multi-family, commercial or industrial developments, and for partitions involving street improvements or cuts/fills.
- 3) A site plan and grading plan is required for projects subject to site design review, including all commercial, industrial, or multi-family developments.
- 4) The grading plan shall show proposed finished grade and parcel corner elevations, with the existing and proposed contours shown at maximum one (1) foot intervals and extended a minimum of 100 feet beyond the improvements. Extremely flat sites will require contour intervals closer than 1 foot as necessary to clearly illustrate proposed grading and drainage slopes and limits.
- 5) The grading plan shall show all drainage systems and proposed erosion control facilities, including swales along property lines as required to intercept uphill surface runoff and convey it to an approved point of disposal.
- 6) Finish Grading vs. FEMA Flood Elevations. Unless otherwise allowed by the City under an applicable land use approval or otherwise required under an applicable development code provision, grading plans shall be designed such that all finish grades (*ie. ground surface after completion of grading work associated with a development permit*) within building envelopes are a minimum of 1 foot above the FEMA 100 year flood elevations.

g. Fire Vehicle Access Plan (*plan view*)

- 1) Where fire lanes are required, provide fire vehicle access plan drawing(s) illustrating the fire truck routes along all fire lanes and turnarounds within the project, to all hydrants, and to within 150 feet of the exterior wall of any building (*OFC 503.1.1*) unless a distance exception is approved in writing by

the Fire Code Official.

- 2) Include dimensions and widths along all fire lanes & turnarounds, as well as widths and dimensions for fire lane easements & turnarounds. Ensure that fire lane widths & clearances shown account for any bollards provided to protect hydrants, buildings or other structures.
- 3) Show & label all vehicular gates to be provided, with notes to provide Knox boxes or other entry means approved by the Fire Code Official.
- 4) Designate location of all fire lane/no parking signs and fire lane curb painting.
- 5) Show & label all fire hydrants (*public & private*) and FDCs, as well showing or noting curb painting at fire hydrant & FDC locations (*ie. 10 feet each way from hydrants per Detail 503 & ORS 811.550(16), and painted curb length at FDC locations as required by the Fire Code Official, 20 foot minimum*).
- 6) If not included on the drawings, a separate worksheet exhibit shall be provided for review illustrating the fire truck turning-radius wheel-path templates (*autoturn or similar*) along all fire lanes and turnarounds within the project, based on the actual fire apparatus to be used (*use design vehicle as directed by the Fire Code Official*).

h. Drainage Calculations

- 1) **A summary of drainage and detention calculations, including basin maps, shall be presented in a clear, concise and complete manner on the site grading or drainage plan sheets, or on a separate sheet.
 - a) These calculations shall address all runoff into the drainage system and downstream capacity.
 - b) Where applicable, include information (*on the drawings as noted above*) such as:
 - Design methodology (*rational or SBUH*),
 - Design storms & design rainfall intensities used,
 - Basin areas,
 - Runoff coefficients used,
 - Design flow and pipe capacity at key points along the storm system improvements, including where flow from upstream property enters the site (*add note if there is no existing or future upstream flow into the system*),
 - Downstream capacity at the connection point of the project drainage system to the existing system, etc.,--as well as key detention system information, such as:
 - Detention volume required,
 - Detention volume provided,
 - Where drain rock is used for detention storage, include

the volume of rock, rock void ratio, and total volume of rock void space,

- Predesign flow rate & design storm(s),
 - Post construction design runoff to detention system & design storm(s),
 - Design out-flow rate & design storm(s),
 - Primary & emergency overflow elevation & location,
 - Orifice size & elevation,
 - Orifice capacity, including head above orifice at design flow,
 - Overflow route capacity (*emergency overflow route shall be shown and identified on the drawings*), etc.
- c) If required by the City, areas contributing flow to each inlet must be computed separately and each inlet with contributing area shall be designated and shown on an accompanying contour map work sheet.

i. Plan Views

- 1) General: **Information required on the overall utility plan shall be shown on the plan views as applicable, including tax lot & address numbers of all existing lots, existing parcels and buildings shown. In addition, the following shall be shown:
- a) **Utilities and vegetation in conflict with the construction or operation of the street and public utilities. Vegetation to include trees greater than 6 inches in diameter (*measured at 4½ feet above soil line-DBH*) and landscape plantings within the right-of-way and easement areas.
 - b) Public and franchise or private utilities to be relocated.
 - c) Match lines with sheet number references.
 - d) **All existing survey monuments within or adjacent to project work areas.
 - e) Additional information as outlined below or as required by the City based on unique or unusual features of the project.
 - f) Show Future Curblines where Applicable. Where existing streets are not fully improved, or where less than full street improvements are being constructed, show the location & alignment of future curblines and intersection curb radii, so that the location of utilities being installed are clearly defined in relation to the future street improvements (*this requirement also applies to water/sewer/storm mainline improvements which are constructed without streets improvements, unless specifically waived by the City*).

2) Streets (plan view)

- a) Street stationing shall be tied to existing property corners, centerline of intersections, and/or existing street monuments.
- b) ****Location, alignment and stationing of **existing streets and proposed street centerline and curb faces.**

****Location of all curbs, driveways, edge of pavement, sidewalks, etc. shall be dimensioned from right-of-way centerline, easement boundary or other means so that its location is clearly defined.**
- c) Bearing of all street centerlines.
- d) Horizontal curve data of street centerline and curb returns, including stationing of point of tangency and point of curvature, length of tangent, length of centerline curve, delta angle, radius point, and centerline radius.
- e) Location of existing and proposed street centerline monuments.
- f) Centerline stationing of all intersecting streets.
- g) Curb return plan view details (*scale not to exceed 1" = 10', with all running slopes & cross slopes of sidewalks, pedestrian ramps & landings labeled*) and separate curb return profiles (showing gutter grades at face of curb) for all curb returns with pedestrian ramps, to demonstrate compliance with PROWAG requirements. Where centerline street grades and cross slope street grades of both intersecting streets is less than 1% (*including through the entire intersection*), the City Engineer may allow plans to show only top of curb elevations along curb returns at quarter-points on the curb return detail views.
- h) Location of the low points of street grades and curb returns.
- i) Crown lines along portions of streets transitioning from one typical section to another.
- j) Location, alignment & dimensions of all street frontage sidewalks, including sidewalks to be constructed with the project and sidewalks which are deferred to a future date. Sidewalks to be constructed with the project and those deferred to the future shall be clearly designated, and all required sidewalk easements shown & labeled.
- k) For residential projects or multi-tenant commercial projects, the location of CBU mailboxes shall be shown (*location must be acceptable to the local postmaster*), and the ADA access path to the CBU mailboxes must be designated per OSSC 1111, with a note designating that the CBU and the required ADA access path to the

CBU must be constructed prior to City acceptance of the street improvements.

- l) Partial street improvements must be based on a full street design for a full urban improvement (*ie. provide full design as if the entire street were being constructed as part of project, including design of sidewalks & driveway approaches, reconnection to existing driveways, etc. on both sides, as well as storm drainage design for both sides of the street and associated intersections, etc.*), with the portion actually to be constructed as part of the project being clearly designated on the plans.

Where partial street improvements cross or intersect with other public or private streets, the partial (*interim*) intersection design must be based on a full intersection design, including but not limited to showing proposed and future ADA compliant pedestrian ramps on all corners, storm drainage for the entire intersection, etc.

- m) For streets which are anticipated to experience significant truck traffic (*as determined by the City Engineer or Public Works Director*), and for driveways or access points which will accommodate truck traffic and/or emergency/fire vehicles, turning-radius wheel-path & vehicle-path templates shall be included with the drawings to demonstrate that the proposed improvements allow vehicular turning movements without encroaching onto sidewalks or crossing curbs outside of the defined driveway or vehicular access path.

3) Storm Drains (plan view)

- a) ****Location, stationing and **size of **existing and proposed storm drains and appurtenances. Show drainage facilities upstream and downstream of the project as required to illustrate conditions affecting the design.**
- b) ****Drainage facilities located outside of public right-of-ways shall be stationed from the downstream end. For all manholes, catch basins, etc, located in or adjacent to streets, drainage facility stationing shall correspond to the street stationing.**
- c) Mainline stationing of all service tees.
- d) ****Location of all manholes, cleanouts (*including storm lateral cleanouts*), junction boxes, pipelines, ditches, etc. shall be dimensioned from right-of-way centerline, easement boundary, property line or other means so that its location is clearly defined.**
- e) All manholes and other structures shall be numbered (*or lettered*) with a designation unique to the project and stationed to facilitate checking the

plan views with the profile.

- f) **The following information shall be provided for all storm drain service laterals.
 - (1) Mainline stationing
 - (2) Alignment
 - (3) Size
 - (4) Length of service lateral
 - (5) Depth at property line or easement line
 - (6) Distance ties from property line cleanout to nearest property corner
 - (7) Location of property line cleanout.
- g) Size, depth, pipe material and class, length of storm pipe, class of backfill and surface restoration shall be clearly shown or called out on the plan view, unless this information is shown on a profile view.

4) Sanitary Sewer (plan view)

- a) **Location, stationing and **size of **existing and proposed sanitary sewers and appurtenances.
- b) All sanitary sewers shall be stationed from downstream manholes to upstream manholes.
- c) **Location of all manholes, cleanouts, pipelines, ditches, etc. shall be dimensioned from right-of-way centerline, easement boundary or other means so that its location is clearly defined.
- d) Mainline stationing of all service tees.
- e) All manholes, cleanouts and other structures shall be numbered (*or lettered*) with a designation unique to the project and stationed to facilitate checking the plan views with the profile.
- f) **Existing City sewer manholes numbers shall be used for all existing manholes or mainline cleanouts shown.
 - (1) Following acceptance by the City, each new sanitary sewer manhole and new mainline cleanout shall be identified on the as-builts with a number provided by the City. The design ID number or letter shall remain on the as-builts next to the City assigned number (*use parenthesis to differentiate*).
- g) **The following information shall be provided for all sanitary sewer service laterals.
 - (1) Mainline stationing
 - (2) Alignment

- (3) Size
 - (4) Length of service lateral
 - (5) Depth at property line or easement line
 - (6) Distance ties from property line cleanout to nearest property corner
 - (7) Location of property line cleanout.
- h) Size, depth, pipe material and class, length of sanitary sewer pipe, class of backfill and surface restoration shall be clearly shown or called out on the plan view, unless this information is shown on a profile view.

5) Water Distribution (plan view)

- a) ****Location, callouts, stationing (*where applicable*) and **size of **existing and proposed water mains and appurtenances, fittings, bends, thrust blocks, straddle blocks, retainer glands or other restraint devices, couplings, domestic water or fire service lines, meter boxes, backflow devices or vaults, etc.**
- b) Each valve and fire hydrant shall be identified and stationed to facilitate checking the plan views with the profile.
- c) ****Location of all waterlines, hydrants, water meters, backflow devices, etc. shall be dimensioned from right-of-way centerline, easement boundary, adjacent property corner or other means so that its location is clearly defined.**
- d) Waterline stationing shall be independent of the street stationing, unless otherwise approved by the City Engineer on a case-by-case basis where waterline profiles are not required.
- e) Size, depth, pipe material and class, length of water pipe, class of backfill and surface restoration shall be clearly shown or called out on the plan view, unless this information is shown on a profile view.

j. Profile Views

- 1) General: Profile views shall conform to the requirements and show the information outlined under this section as applicable:
 - a) Profile views shall be to the same horizontal scale and on the same sheet as the corresponding plan view.
 - b) Match lines with sheet number references.

2) Streets (profile view)

- a) Original ground & finish grade profile along the centerline and curbs as appropriate. For off-set or super-elevation cross-sections, both curbs shall be profiled.

Ditch invert profiles shall be shown where curbs are not to be constructed.

Profiles at intersections or cul-de-sacs shall be extended to the back of the far side PUE as a minimum, or to the top/bottom of cut or fill slopes where applicable, whichever distance is greater.

- b) Stationing, elevations and percent slopes for centerline or top of curb profiles.
- c) Beginning point of all vertical curves, points of vertical intersection, end of vertical curve, length of vertical curve, K-value and design speed, and low point of vertical curve if a sag curve.
- d) Profile Extension. Show the projection of the profile of streets that may be extended or reconstructed in the future. The projected profile shall extend a minimum of 200 feet beyond the proposed work limits. The City may require profiles to be extended further where necessary due to topography or to demonstrate ability to tie to existing streets. Projected profiles shall be designed to be compatible with the constraints of the terrain.
- e) The top of curb profiles for all cul-de-sacs, including vertical curves for any grade changes exceeding 1%, with a K-value not less than 3.
- f) Separate curb return profiles (showing gutter grades at face of curb) for intersection curb returns in accordance with requirements under PWDS 1.10.h.2.g. The location of all pedestrian ramps shall be indicated and labeled on the curb return profiles to demonstrate that the design grade along the gutter pan is less than 2% at the pedestrian ramp throat.
- g) Street Cross Section Profiles. Unless otherwise approved or required by the City, cross sections showing existing and proposed finish grade shall be shown at 50 foot intervals to demonstrate that the proposed street grades match the surrounding grades and address drainage concerns, as well as to determine the need for slope easements, as well as at existing driveways or other access ways.

Unless otherwise approved by the City in existing developed areas, the cross sections shall extend a minimum of 50 feet beyond the right-of-way line where existing cross slopes are less than five percent (<5%) and

a minimum of 25 feet beyond the right-of-way line where existing cross slopes are greater than five percent (>5%).

- h) Profiles for partial street improvements shall include information for both the turnpike construction (*including ditch profiles as applicable*), as well as future street curb profiles, including full street cross section profiles.

3) Storm Drain (profile view)

- a) Profile of existing and proposed ground surface along centerline of pipe, with rim and pipe inverts at each manhole, catch basin, etc.
- b) Manholes and other appurtenances shall be numbered (*or lettered*) with a designation unique to the project and stationed to match the corresponding plan view.
- c) Size, slope, pipe material and class, length of storm pipe and class of backfill between consecutive manholes, catch basins, junction boxes or cleanouts.
- d) Crossings. All existing or proposed public and franchise or private utilities crossing the profile and any existing utilities which potentially are in conflict with construction of the improvements.
- e) Existing drainage facilities, including offsite facilities upstream and downstream which affect the design (*ie. size, capacity and/or slope of upstream and downstream system*).
- f) Profiles for ditch and creek flow lines shall be extended as appropriate to illustrate conditions affecting the design beyond the project, both upstream and downstream. Existing channel cross sections and typical new channel cross sections shall also be shown.
- g) Profile Extension. Where mainline storm cleanouts are approved for storm lines which will be extended in the future, plan and profile showing the alignment and depth of the anticipated future extension from the proposed cleanout to the next manhole or catch basin shall be included (*without mainline grade breaks between structures*).

4) Sanitary Sewer (profile view)

- a) Profile of existing and proposed ground surface along centerline of pipe, with rim and pipe inverts at each manhole.
- b) Manholes and other appurtenances shall be numbered (*or lettered*) with a designation unique to the project and stationed to match the corresponding plan view.

- c) Size, slope, pipe material and class, length of sewer and class of backfill between consecutive manholes.
 - d) Crossings. All existing or proposed public and franchise or private utilities crossing the profile and any existing utilities which potentially are in conflict with construction of the improvements.
 - e) Profile Extension. Where mainline sewer cleanouts are approved (*see PWDS 4.16.b.1*), plan and profile showing the alignment and depth of the anticipated future extension from the proposed cleanout to the next manhole shall be included (*without mainline grade breaks between manholes*).
- 5) Water Distribution (profile view)
- a) Profiles. Waterline profiles shall be provided for all waterlines within existing right-of-ways or along alignments paralleled (*within 15 feet*) or crossed by existing public utilities.

Waterline profiles will not be required for new waterlines within new right-of-ways unless required to illustrate and/or prevent conflicts with proposed utilities.
 - b) Profile of existing and proposed ground surface along centerline of pipe, as well as existing and proposed pavement surface of adjacent streets (*where applicable*).
 - c) Show the location of valves, fittings, fire hydrants and other appurtenances, with all valves and fire hydrants numbered and stationed to match the corresponding plan view.
 - d) Size, pipe material and class, depth of cover and class of backfill and surface restoration.
 - e) Crossings. All existing public and private utilities crossing the profile and any existing utilities which potentially are in conflict with construction of the improvements.

1.11 EASEMENTS, ETC.

a. ****City Easements.** Utility easements to the City (*in a form acceptable to the City and conforming to the PWDS requirements*) shall be provided and recorded for any City utilities (*or fire lanes*) outside of public street right-of-ways (*see requirements in following section for private easements*).

1) City Easement Widths. The minimum utility easement widths and property line offset requirements are referenced in subsequent PWDS sections for Storm Drain, Sanitary Sewer and Water. The developer's engineer shall verify that widths and extents of easements (*to the City*) fully comply with standards per PWDS 5.15.d (water), PWDS 4.15.d (sewer), PWDS 3.12.d (storm) or PWDS 2.31.c (common driveways/fire lanes) based on the final approved design.

2) Other recorded easements/instruments affecting City access and/or interests (*ie. fire lane easements, detention system easements & maintenance agreements, grease interceptor maintenance agreements, common driveway maintenance agreements, etc.*) shall also be in a form acceptable to the City and conforming to the PWDS requirements.

3) **See also Easement Procedure Summary on cover page of Appendix D.**

b. ****Legal Description & Exhibit Map Required.** All recorded easements (*including private easements required by City standards*) or right-of-way dedication documents shall include a legal description of the easement or ROW area and a "to-scale" exhibit map, except for easements created by a plat, in which case the recorded easement documents may reference the easement as shown on the plat.

1) Exhibit Maps. The easement or ROW boundary & area shall be clearly shown and labeled on the exhibit map, and include all information/callouts required to illustrate the information contained in the legal description, including point of beginning, bearings and distances if applicable, as well as deed callouts or lot/parcel numbers (*for the property containing the easement*) and street names as required to clearly show the location of the easement and the affected properties.

a) In addition to deed callout or lot/parcel numbers, exhibit maps shall also list the tax lot number & address of the properties shown (both grantor & grantee property), as supplemental information for reference & orientation only.

b) In order to comply with ORS 93.600, use of a tax lot number and/or an address as the ONLY means to describe property is not considered to be legally adequate as a legal description (for use in a recorded

document).

- 2) Legal descriptions and exhibit maps shall be submitted for review and approval by the City Engineer and/or Public Works Director prior to recording.
- 3) Exhibit maps not drawn and plotted to scale, or not containing the information required above, or which do not match the utility or access alignments shown on the final approved construction drawings, or which do not match the widths required to meet City standards, will be returned for revision.

c. **Prohibited within Easements Granted to the City.** Property owners shall not plant, build, construct, or create (*nor permit others to plant, build, construct, or create*) any fills, trees, buildings or other structures, including fences or parallel utilities, on or within an easement granted to the City which might interfere with the use by the City of the easement for the defined purposes, or which might interfere with the normal operation, inspection, access to or maintenance of the utilities within the easement, including excavation for repairs or replacement if necessary. In addition to permanent structures, prohibited structures shall include sheds, decks, footings or overhanging portions of structures which are located outside of the easement.

- 1) Access gates acceptable to the Public Works Director shall be installed in fences which the City allows to be constructed across an easement granted to the City.
- 2) The property owner shall not construct cuts or fills within or on the easement area without express written approval by the City, since this will interfere with the use of the easement for the purposes for which it was granted. Fills will make the utilities less accessible for inspection and/or maintenance, and cuts may result in inadequate cover over said utilities, and either will result in access points (*manholes, inlets, valves, cleanout or meter boxes, etc.*) no longer being at the proper grade. Any such approval by the City (*which approval may be granted or withheld at the City's sole discretion*), shall be contingent on the property owner performing all work required by the City in order to mitigate impacts due to such cuts or fills, including reconstructing or resetting the utilities and appurtenances as directed by the City at the property owner's expense. It is understood and agreed that the City may remove (*or require removal by the Grantor*) any physical obstructions including buildings, overhangs, fences, trees, shrubbery or fill material, and abate any use of the easement if the City finds that the physical obstruction or use will interfere with the City utility or the City's ability to access, maintain or repair the City utility, and that such removal or abatement may be completed (*including if removal by property owner is required*) without recompense to the property owner(s) (*except to the extent that such recompense or reimbursement may be specifically included in the recorded easement documents*).

- 3) The City acknowledges that the property owner may generally use the easement area for access driveways and/or permitted parking (*except that parking is not allowed in fire lane easement areas*), or similar uses which are allowed by the City.
- d. ****Street Frontage PUE.** Where PUEs do not already exist, projects shall include minimum eight (8) foot public utility easements (PUE) for franchise utilities along all lot lines fronting public or private streets, as well as easements for fire hydrants, sewer & storm drainage property line cleanouts & water meters where set behind the sidewalk, cluster mail box pads, and sidewalks at driveway crossings (*when they must be widened or jogged back to meet ADA standards*), pedestrian ramps at intersections, city street light poles, etc. which may be located behind sidewalks and just outside of the public right-of-way.

The requirement for PUEs may be waived by the City on a case-by-case basis where the right-of-way widths are adequate to accommodate all existing and future franchise utilities AND zero setbacks are allowed on the property by City code.

- 1) Wording on Plat. PUEs created by a plat should include wording similar to the following, with PUE plat wording to be acceptable to the both Public Works and the County Surveyor.

"We hereby create a utility easement as shown along the public right-of-ways for franchise utilities and also dedicate to the City of Independence along said utility easement a waterline, sanitary sewer, storm drain and public sidewalk easement."

- 2) Construction of a building or a structure within the PUE is prohibited, including footings or overhanging portions of structures located outside the easement. If the City allows a retaining wall or a fence to be constructed within or across a PUE, an encroachment license agreement shall be executed and recorded against the property stipulating that the property owner will be responsible for any restoration costs associated with removal and reconstruction of said retaining wall or fence if such removal is required to service, maintain or repair utilities installed within the PUE, whether by the City or by any franchise utility company.
- 3) Where easements for City water, sewer or storm drain mainlines are proposed or exist along street frontages, new PUEs shall be located outside of (*and separate from*) City utility easements (*except at crossings*), to prevent future installation of franchise or private utilities parallel with City pipelines within the City easements.

- e. ****Private Easements.** Private utility easements a minimum of ten (10) feet wide (*centered on the utility pipe and offset from common property lines*) shall be provided for all franchise utilities, private water, sanitary sewer and storm drains, ditches or channels outside of public right-of-ways and outside the boundaries of the property

being served, or which are extended across the development property in order to provide service to other properties.

Private access easements shall also be provided for any driveway, sidewalk or path crossing property other than the one being served, and shall include provisions defining who is responsible for repair and/or maintenance costs for the subject improvements.

Acquisition of such private easements shall be the sole responsibility of the entity requesting or installing the private utilities, pipes, ditches or channels, sidewalks or pedestrian paths, or driveways and other access routes.

- 1) Extension of private water, sanitary sewer and storm drain laterals across adjacent private property is typically only allowed where it is the only feasible method of providing utility service to a development property.
 - 2) Any proposal for extension of private water, sanitary sewer and storm drain laterals across adjacent private property instead of from a street frontage shall not be allowed as a substitute for the PWDS requirement to extend mainline utilities across the frontage of development property (*ie. to & through*) in order to provide for such services and to allow for future extension, as required under PWDS 1.6.c, d & e.
 - 3) Required Language for Private Easements. While the City does not dictate the specific form required for use on the private easements noted above (*ie. including both required utility easements and required access easements*), the easement forms used for private easements required by City standards shall (*in addition to referencing the legal description and exhibit map defining the easement boundaries*)
 - (A) define which properties the private easement is to the benefit of (*by legal description & also as shown on the exhibit map*),
 - (B) define who is responsible for repair and/or maintenance costs associated with the easement.
 - (C) include provisions that the easement cannot be extinguished without explicit written authorization from the City, and
 - (D) include language that the easement will not be extinguished by the doctrine of merger (*unless the properties are consolidated into a single legal lot of record*).
- f. ****Recorded copies of all required easements, dedications and/or agreements (*both public & private*) shall be submitted to the City Engineer and the Public Works Director prior to final approval of the drawings and start of construction, with the exception noted under PWDS 1.9.i.3 for subdivisions or partitions where all public utilities will be constructed prior to the recording of a final plat. All recording costs shall be borne by the Developer.**
- g. When requested by Public Works or the City Engineer, a digital drawing shall be

submitted containing the final alignment & boundaries of all new easements associated with the development. The drawing shall be in Autocad format, and shall include lot lines, right-of-way lines and easement lines each on separate layers.

1.12 PUBLIC WORKS VARIANCES TO DESIGN STANDARDS

a. Request for Public Works Variance to Specifications/Standards

- 1) Public Works variances to specifications or standards may be requested as outlined below.
- 2) In considering Public Works variance requests, the City, at its sole discretion, will seek input from individuals and/or agencies which may have information that would be relevant to the decision making process.
- 3) It is to be noted that if the requested variance involves public safety, the City will rule in favor of safety.
- 4) It is the responsibility of the design engineer to submit a written request for any proposed deviations or variances from City standards. Failure by the City to detect a deviation from (*or the need for a required variance of*) the PWDS requirements during drawing review does not constitute an default approval of said variance, unless the variance was requested in writing as outlined below and approved by the City.

b. Public Works Variance Process

1) Submittal

- a) Requests for Public Works variance shall be submitted in writing to the City Engineer. This written request shall state the desired Public Works variance, the reason for the request and a comparison between the specification/standard and the variance as far as performance, etc.
- b) Any variance of these Standards should be documented and referenced to a nationally accepted specification/standard. The use thereof shall not compromise public safety or intent of the City's Standards.

2) City's Review

- a) The Public Works variance request shall be reviewed by the City Engineer who shall make one of the following decisions:
 - (1) Approve as is,
 - (2) Approve with changes, or
 - (3) Deny with an explanation.
- b) Approval of a request shall not constitute a precedent.

- c) For Public Works variances which will result in increased maintenance or increased future costs by the developer (*or the future property owners*), the variance request must be concurred with in writing by the developer/property owner prior to final approval by the City.

3) Appeal

- a) Applicant may appeal the City Engineer's decision to the City Manager. Applicant may appeal the City Manager's decision to the City Council.

c. Criteria for Variance of Specification Standards

- 1) The City Engineer may grant a Public Works variance to the adopted specifications or Standards when all of the following conditions are met:
 - a) Topography, right-of-way or other geographic conditions impose an unreasonable economic hardship on the applicant (*as determined by the Public Works Director*) and an equivalent alternative is proposed which can accomplish the same intent. Variances to self-imposed hardships shall not be allowed. The variance requested shall be the minimum variance which alleviates the hardship.
 - b) Demonstration that the requested Public Works variance is a minor change to a specification or standard required to address a specific design or construction problem which, if not enacted, will result in an undue hardship (*note: additional cost or time required in order to provide the specific pipe, fittings or equipment required by City standards shall not typically be a justification for a variance request*).
 - c) An alternative design is proposed which will provide a plan equal or superior to these Standards. In considering the alternative, the City Engineer and/or Public Works Director shall consider appearance, durability, cost of maintenance by the City, public safety and other appropriate factors.

1.13 PRECONSTRUCTION CONFERENCE

- a. Following approval of the civil/site/street/utility drawing package by applicable agencies with jurisdiction, a preconstruction conference shall be scheduled with the City before issuance of the public works construction permits, at a location in Independence approved by the City. The purpose of the conference is to discuss the construction schedule and timing of the civil/site/street/utility work which requires coordination, as well as to provide the opportunity for parties from the construction team and various agencies/entities involved to meet and coordinate as may be necessary, and answer contractor questions regarding the work shown on the approved drawings.
- b. In addition to a City representative, the meeting is to include the following parties from

the development team (*the development team is responsible for inviting these parties*):

- Developer's representative.
- Developer's engineer of record during construction.
- Prime contractor.
- Street/site/utility subcontractor(s) (*if different than the prime contractor*).

Development/Construction Team Contact List. The development team is responsible for providing the City with a written list of the names and full contact information (*including mailing addresses and email addresses*) of all persons attending the preconstruction conference on behalf of the development, design or construction teams.

- c. Agency & Utility Company Notification. The development team shall be responsible for notifying the franchise and private utility companies (*as well as the County Public Works and ODOT if applicable*) of the time and location of the preconstruction conference, and requesting that a representative of each agency and utility be present. The Developer may be required to submit proof of notification to the City prior to the preconstruction conference. Copies of notification letters or emails sent to the utility companies are acceptable.
- d. The developer, prime contractor and/or the street/site/utility subcontractor shall provide the following prior to or at the preconstruction conference.
- Overall bar-chart project schedule (*for the street/site/utility work*)
 - Listing of supervisory personnel and two emergency after hours contact persons.
 - Materials testing lab (*and outside inspection entity if applicable*).
 - List of subcontractors & major materials suppliers to be utilized by the prime contractor and the street/site/utility subcontractor for work under the Public Works Permit.
 - Certificates of insurance from the contractor performing the site/street/utility work, minimum limits and format as outlined in PWDS Appendix E. The City and Westech Engineering (*as City Engineer*) shall be covered as additional insured. The City is to be named as the certificate holder.
- e. Evidence of Worker's Compensation coverage from the contractor or subcontractor(s) performing the site/street/utility work.

1.14 CONSTRUCTION OBSERVATION, INSPECTION & TESTING

a. General

- 1) Periodic Inspection. All infrastructure construction associated with development shall be inspected or periodically observed by a professional engineer licensed in the State of Oregon (*or a qualified individual under the engineer's supervision*) as required in the Developer-City Construction Agreement.

The City reserves the right to inspect any and all work at its discretion. The Contractor shall be responsible to notify the City prior to all testing, to allow City staff to be present at said testing.

Copies of all test reports shall be submitted to the City as soon after completion of testing as is feasible. Failure to provide test reports in a timely manner may result in the issuance of a stop work order by the City, until such reports are provided.

City designed & funded projects may be inspected by Public Works or the City Engineer (*or their authorized designees*) as applicable and as determined by the City.

- 2) An engineer whose firm, or any member of the firm, has a corporate, partnership or any form of real property interest in the development for which the improvements are required cannot be designated engineer-of-record. The engineer-of-record's relationship to the project must be solely that of a professional nature.
- 3) It shall be the policy of the City not to provide full time inspection services for non-public funded public improvements, including public access parking lots and fire lanes.
- 4) It shall be the Developer's responsibility to provide an engineer to perform periodic inspection and/or construction observation services for improvements which are designed and permitted under these PWDS, at the developer's expense.
- 5) These inspection and construction observation requirements are not applicable to individual sidewalk, driveway or service lateral permits for single residences. If the project scale is such that the retention of an independent engineer-of-record is not warranted, the Developer may request that the City provide these services.

If the City agrees to provide these services (*at the City's sole discretion*), the Developer shall be responsible to reimburse the City for any costs incurred for these inspection and/or construction observation services.

b. City Activities

- 1) Services provided by the City shall include:
 - a) Liaison between the engineer-of-record and the City;
 - b) Monitoring of work progress and performance testing as deemed desirable;
 - c) The performance of administrative and coordination activities as

required to support the processing and completion of the project;

- d) The issuance of stop work orders upon notifying the engineer-of-record and/or the Contractor of the City's intention to do so.
 - e) Operate all valves, including fire hydrants, on existing waterlines.
- 2) In addition, the City shall be notified a minimum of 48 business hours (2 *business days*) prior to the following tests and inspections so that a City representative may be present to witness the inspections or tests. Testing shall be started and completed during normal City business hours.
- a) Streets (public streets, private streets/fire lanes)
 - (1) Curb inspection;
 - (2) Subgrade testing and/or proof rolls;
 - (3) Base rock testing & proof rolls;
 - (4) AC pavement placement and testing;
 - b) Sanitary Sewers
 - (1) Mandrel testing of sewer mainlines;
 - (2) Air testing of sewer mainlines and laterals;
 - (3) Vacuum testing of sewer manholes (*after paving or final surface restoration*);
 - (4) Video inspection of sewer mainlines (*after completion of manhole channeling*);
 - c) Storm Drains
 - (1) Mandrel testing of storm drain mainlines;
 - (2) Video inspection of storm mainlines (*after completion of manhole channeling*);
 - d) Water Distribution System
 - (1) Pressure tests of water mainlines, service lines to meters or backflow devices, hydrants, etc.;
 - (2) Disinfection of water mainlines, service lines, hydrants, etc. (*see App. B notes for procedures*).
 - (3) Bacteriological Testing (*see App. B notes for procedures*).
- c. Developer's Engineer-of-Record's Activities
- 1) The engineer-of-record must be registered to practice engineering in the State of Oregon. Material testing which is not performed by the engineer-of-record must be accomplished by a recognized testing firm or another registered engineer.
 - 2) ***The engineer-of-record must personally perform all activities marked by an (*) and must supervise all individuals performing other delegated activities.**

- 3) The following minimum activities are required of the developer's engineer-of-record:
- a) *Execute a form accepting responsibility and verifying that he/she has been retained as engineer-of-record during the construction of the project (*ie. the Developer-City Construction Agreement*):
 - b) *Attend the preconstruction conference and ensure that approved construction drawings are distributed to contractor, subcontractors and franchise utility companies.
 - c) Obtain and use a copy of City-approved construction drawings and specifications during construction;
 - d) Coordinate to ensure that the City is notified 48 business hours (2 *business days*) before the start of construction or resumption of work after shutdowns, except for normal resumption of work following Sundays or holidays.
 - e) Call to the City's attention within two (2) working days all drawing discrepancies and/or required modifications, material changes, stop work orders or errors or omissions in the approved drawings or specifications.
 - f) Maintain records which contain at least the following information and submit copies to the City on a weekly basis:
 - (1) Any Site Visits during the previous week
 - (a) Date and time of site visits
 - (b) Weather conditions, including temperature
 - (c) A description of construction activities
 - (2) Statement of directions to modify drawings, specifications, stop work, reject materials or other work quality actions;
 - (3) Public agency contacts which result in drawing modifications or other significant actions;
 - (4) Perceived problems and action taken;
 - (5) Results of final and staged inspections and testing (*notify & coordinate with City to allow City representative to attend any testing during regular business hours*);
 - (6) Copies of all material, soil and compaction test results.
 - g) Construction Staking. The engineer of record shall either (1) provide all surveying services necessary to stake the project prior to and during construction, and as necessary to prepare as-built drawings when the

project is complete, or (2) confirm that these surveying services are being provided separately (*by the developer or by the contractor*), all in conformance with City Standards.

- (1) Construction staking shall be adequate to ensure that all streets, sidewalks, water, sewer, storm drainage and other improvements & utilities are properly installed to design alignments & grades, as well as with respect to easements, right-of-ways and property lines.
 - (2) Construction staking shall be adequate to ensure that all streets, sidewalks, water, sewer, storm drainage and other improvements & utilities are properly installed to design alignments & grades, as well as with respect to easements, right-of-ways and property lines. All construction staking shall be all be clearly marked on lathe in the field for reference by the Contractor, inspectors, etc. during construction. Even when GPS is used during construction, adequate field staking shall be provided to allow verification of locations, alignments, depths, etc. during construction and inspection.
- h) Review and approve all pipe, aggregate, concrete, A.C. and other materials submittals to ensure their compliance with City Standards, and provide any submittal review comments to the City Engineer and/or Public Works Director;
 - i) *Approve all drawing or specification modifications in writing and obtain City approval prior to the performance of the work;
 - j) Periodic Inspection. Provide periodic construction observations of construction activities as required to ensure all finished work meets City standards and specifications;
 - k) *Perform (*or verify that they are performed*) material, compaction and other tests required to ensure City specifications are met;
 - l) Periodically check that curb, storm drain work and pavement grades are in substantial conformance with approved drawings;
 - m) For pavement construction, perform the following stage construction observations and record the date that each is verified:
 - (1) Curbs are built to line and grade;
 - (2) Subgrade meets grade and compaction specifications;
 - (3) Base rock meets grade and compaction specifications;
 - (4) Leveling course meets grade and compaction specifications;

- (5) Wearing course meets grade and compaction specifications.
- n) For sanitary and storm drain construction, perform the following stage construction observations and record the date that each is verified:
- (1) Sewers are installed to proper line and grade;
 - (2) Trenches are properly backfilled and compacted;
 - (3) Air testing and video inspections are performed according to standard procedures.
- o) For grading, verify that the grading plan, as staked, will result in acceptable slopes along exterior property lines, proper onsite and offsite drainage, and erosion control.
- p) Request for Final City Inspection. When the engineer-of-record believes that the project is complete (*based on his/her inspections with the Contractor*), the engineer-of-record shall notify the City that the project is ready for final inspection.
- (1) Punchlist by Engineer-of-Record. In conjunction with this notification, the engineer-of-record shall also provide the City with a complete and detailed summary of any items which remain to be completed.
 - (2) Draft As-Builts for Review. A complete set of black-line as-built drawings for review by Public Works and the City Engineer;
 - (3) Punchlist Verification. Prior to requesting followup inspections, the engineer-of-record and contractor shall provide the City with verification that all items on any previous checklists/punchlists have been completed (*submittal of a hand annotated copy of the previous checklist/punchlist is acceptable*).
- q) Completion Report by Engineer-of-Record. File a completion report which contains:
- (1) Completion Letter. A project completion letter from the engineer-of-record verifying that the work under the Public Works permit was completed in substantial conformance with the approved construction drawings;
 - (2) Final As-Builts. A complete set of final as-built drawings to the Public Works Director and the City Engineer (*see following "As-Built" section for specific requirements.*);
 - (3) Test Results. Include copies of the results of storm, sewer and manhole tests, video inspections, waterline tests, as well as

material tests, compaction tests (*backfill, subgrade, baserock & pavement*) and soil analysis as applicable.

As noted above, all test reports are to be submitted to the City as soon as feasible after testing is completed, but the completion report is to contain copies of all test reports compiled into a single package.

- (4) ADA Verification. Written verification that all installed ADA ramps, sidewalks and exterior pedestrian access routes (*those covered under the Public Works permit*) have been checked and comply with current ADA and City standards.
 - (5) A copy of any required forms and/or certifications submitted to DEQ for sanitary sewer improvements (*for the City's records*).
 - (6) A copy of any required forms and/or certifications submitted to OHA-DWS for water system improvements (*for the City's records*).
 - (7) A copy of any required completion forms and/or certifications submitted to agencies in relation to any state/federal permits (*ie. wetlands, etc.*) required for the project (*for the City's records*).
- r) Cost Information for Maintenance Bonding. Provide information summarizing the cost of the improvements which must be covered under any required maintenance bonds (*see PWDS G.15 for bond amounts & bond periods*).

1.15 WARRANTY INSPECTIONS :

- a. Warranty inspections will be performed by Public Works staff or the City Engineer near the end of the warranty period (*typically during the last month of the warranty period, unless circumstances dictate otherwise*).
- b. Re-inspection of the sanitary sewer and storm drainage systems by cleaning & TV inspection shall be performed within the last month of the warranty period. Based on the results of the TV inspections and/or the City's warranty inspections, additional warranty tests may include mandrel testing or low pressure air testing. The results of these test(s) will be used by Public Works Director to determine if final acceptance of the system is warranted and what corrective work is required prior to final acceptance. The cost of these re-inspections, retesting (*where required by the City*) and any corrective work shall be the responsibility of the Developer.
- c. The warranty period will not be considered to be complete, and maintenance bonds will not be released until after all warranty inspections are finished and any resulting

corrective work is completed.

1.16 AS-BUILT DRAWINGS

- a. As-built or record drawings prepared by the design engineer (*or engineer-of-record*) are required whenever the work results in new or modified public improvements (*as well as private improvements designed under the provisions of the PWDS*) and shall describe all revisions to the previously approved construction drawings.
- b. As-built or record drawing sets shall include all drawing sheets which were included in the original approved construction drawing set (*including copies of architectural site plans or other drawing sheets which were included as part of the approved construction drawing set*), plus any additional sheets required to illustrate and document approved changes.
- c. The engineer-of-record shall utilize information from the Contractor's field record drawings, the engineer's field inspections, and the as-built survey as applicable to ensure that the as-builts accurately reflect as-built conditions.
- d. As-Built Survey. Unless otherwise approved by the City Engineer, as-built drawings for public sanitary sewer and public storm drains (*as well as pipes & channels relating to stormwater detention systems, outfalls and/or overflows*) shall be based off of an as-built survey (*rim, invert, slope, alignment, etc.*) conducted by a land surveyor registered to practice surveying in the State of Oregon.
 - 1) The as-built survey shall include ties for any other utilities or improvements which were constructed different from the approved construction drawings.
- e. Show all below grade franchise or private utility vaults and street crossing, as well as all above grade transformers, pedestals, etc.
- f. Distance Ties to Sewer & Storm Cleanouts. The location of all cleanouts on service lines shall be shown on the as-builts (*sanitary sewer and storm drain*) based on distance ties from two permanent points. The tie points shall be immovable structures, such as property pins, street monuments or the center of manholes.
- g. City Numbers for Sewer Manholes, Cleanouts, etc.
 - 1) The new sanitary sewer manholes and/or mainline cleanouts will be assigned City numbers by the City at the as-built stage. City sewer manhole numbers shall be shown on the as-built drawings in parenthesis next to the design manhole designation.
 - 2) Street Names & MH numbers. If street names are changed, the new street name shall be shown on the as-built drawings in parenthesis next to the original design street names. Since the inspection reports, TV inspection reports, etc, will reference the design street names and design sewer manhole

numbers, the as-builts need to retain the design information (*in addition to showing the new City sewer manhole numbers and as-built street names*) to allow reference to the construction report documents.

- h. Recording References on As-Builts. The recording references for the easement documents for all existing or required public and private easements shall be included on the as-built drawings (*as well as listing the beneficiary of each easement*), as well as recording references for construction deferral agreements, maintenance agreements, etc.
- i. Draft As-Builts Required Prior to Final Inspection. Legible black-line copies of the as-built drawings shall be submitted to the City prior to the final walkthrough inspection and for review prior to submittal of the final as-builts.
- j. Final As-Builts.
 - 1) Following the final walkthrough and review of preliminary as-builts by the City, submit approved full size as-built drawings on mylar or vellum to the Public Works Director, as well as full-size as-builts in electronic format (pdf) to the Public Works Director and the City Engineer. Additionally, two paper sets of final as-builts shall be submitted to Public Works Director and one set to the City Engineer.
 - 2) Subject to approval in writing by the Public Works Director (*case-by-case basis*), as-built or record drawing sets for private improvements only (*ie. those designed under the provisions of the PWDS*) may be provided as full size pdf sets only, other than sheets including pipes & channels relating to stormwater detention systems, outfalls and/or overflows (*for which hard copy sheets are required as noted above*).
- k. Digital Parcel/Lot/ROW Map.
 - 1) In addition to the mylar or vellum as-builts, a digital map shall be submitted to the City showing the final configuration of lot lines and right-of-way lines within or fronting the development, as well as easement boundary lines.
 - 2) The drawing shall be in Autocad format, with lot lines, right-of-way lines and easement lines each on separate layers.
 - 3) Other than lot lines and right-of-way lines, the only other information shown shall be limited to street names and the name of the development.