CITY OF MT. ANGEL
Public Works Design Standards

Division 1

General Requirements

DIVISION 1
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. 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 neuter pronoun; 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 improvements for which the Development Code requires 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 for variances to these Standards shall be based on topography, right-of-way, geography or existing physical conditions which impose an economic hardship on the applicant. Request must show that the variance meets the intent of the standards and will not compromise safety, impact other properties or cause an increase in maintenance.

f. 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. Standard Specifications are hereinafter referred to as Public Works Standards (PWS) and can be reviewed at City Hall.

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 PWS, the more stringent as determined by the City Engineer and Public Works Superintendent 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

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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.

1.2 PURPOSE

a. The purpose of these Standards is to provide a consistent policy under which certain physical aspects of public utility design will be implemented. Most of the elements contained in this document are Public Works oriented and most are related to the development or platting process. However, it is intended that they apply to both public and private work designated 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.

2) provide design guidance criteria to the private sector for the design of public improvements within the City of Mt. Angel.

3) provide public utility improvements designed in a manner to allow economical future maintenance.

4) Develop minimal 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 Mt. Angel requires strict compliance with Oregon Revised Statute 672 for professional engineers. The following requirements shall be applicable to the design of streets, grading plans, sanitary sewers, storm drain systems (including detention systems), and water distribution and storage facilities.

1) All engineering drawings, reports, or documents designated herein shall be prepared by a professional Civil Engineer registered in the State of Oregon, or by a subordinate employee under his direction, and shall be signed by him and stamped with his seal to indicate responsibility for them.

2) It shall be the Design Engineer's responsibility to review any proposed extension, modification or improvement of a public utility system with the City

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prior to 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 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 have not been met.

3) Any engineer having submitted to the City false or inaccurate information of a material nature will be warned of their conduct, and the Oregon State Board of Engineering Examiners will 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) As-built Drawings: Drawings prepared by the Design Engineer, signed and dated by the city representative indicating the drawings have been reviewed and revised, if necessary, to accurately show all as-built conditions and construction details.

2) City: The City of Mt. Angel, Oregon.

3) 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.

4) 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 Superintendent. Similarly, the words approved, acceptable, satisfactory, shall mean approved by, acceptable to, or satisfaction to the Superintendent.

5) 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.

6) Dwelling Unit: A facility designed for permanent or semi-permanent occupancy and provided with minimum kitchen, sleeping and sanitary facilities for one family.

7) Easement: Areas along the line of public utilities which are outside of dedicated right-of-way. Easements shall be prepared on City forms granting rights along

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the public utility line to the City.

8) Multiple Family Dwelling: A building or portion designed thereof for occupancy by two or more families, living independently of each other.

9) 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 comparable with this established standard.

10) Owner: Any individual, partnership, firm or corporation by whom the Design Engineer has been retained or who, as a property owner, is making arrangements with the City.

11) Person: Individual, firm, corporation, association, agency or other entity.

12) Plans: See Construction Drawings.

13) 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.

14) Residential User: The owner, lessee, or occupant of a single dwelling unit in one structure.

15) 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 shall have the exclusive right to install and maintain streets and public utilities.

16) Roadway: All of that portion of the right-of-way used, for vehicle movement, which exists between the curbs or proposed curbs or proposed curb lines.

17) Single Family Dwelling: Any residential building designed to house one family.

18) Standard Details: The drawings of structures or devices commonly used on City work and referred to on the construction drawings. Also called Standard Plans.

19) Street or Road: Any public highway, road, street, avenue, alley, way, easement or right-of-way to be used for vehicle movement.

20) Superintendent: The Superintendent of Public Works of the City of Mt. Angel or his/her authorized representative.

21) 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.

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22) Traveled Way: That portion of the roadway for the movement of vehicles, exclusive of shoulder and auxiliary lanes.

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. Installation of private utilities in a common trench with public water, sanitary sewer or storm drain mainlines is prohibited. A minimum of 3 feet of horizontal separation must be maintained between public and private utilities except at crossings.

c. 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.

1.6 PROVIDING FOR 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 Superintendent.

b. Storm drain systems and sanitary sewers shall be sized to accommodate the entire drainage basin which they will ultimately serve.

c. Utilities and street improvements shall be extended to the boundaries of the development to provide for future extensions to the adjoining areas and prevent adjoining properties from becoming landlocked. In the case of utilities, this shall 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.

d. The City may require over-sizing of utility lines to accommodate future growth of the City.

e. Where existing City utility lines do not adjoin the proposed development or the capacity of existing lines is inadequate, the developer will be required to extend new utility lines to the development as necessary, and extend them to provide for service to adjacent properties. Existing City utilities crossed, intercepted by or in the vicinity of new utility lines or facilities shall be connected to the new system at locations as required by the City Engineer and Public Works Superintendent. Existing City utility lines which are parallel with, or which are replaced or superceded by the new utility lines (as determined by the City), shall be abandoned or removed as part of the project (and old facilities served by the abandoned lines connected to the new system as applicable), as required by the City Engineer and Public Works Superintendent.

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f. 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, the developer may be required to improve the roadways to the development.

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 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 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 time limits between approval of the construction drawings by the City and the time by which construction must begin shall apply to each phase independently.

1.9 REVIEW PROCEDURE

a. Detailed provisions covering the review procedures and permitting requirements for street, 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 is encouraged to meet with the Public Works Superintendent and the City Engineer prior to final design of the proposed improvements. It shall be the developer's responsibility to provide the City Engineer with base maps showing existing utilities and proposed street improvement limits prior to the pre-design conference.

c. For single family residential developments, three (3) sets of complete construction drawings shall be submitted to the City for preliminary review. For commercial, industrial and multifamily residential developments, four (4) sets of complete construction drawings shall be submitted to the City for preliminary 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. Incomplete submittals will be returned without review.

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d. Upon completion of the preliminary review, the City will return one (1) set of drawings outlining the required revisions. In order to be entitled to further review, the applicant's engineer must respond to each comment of the prior review. All submittals and responses to comments must appear throughout to be a bona fide attempt to result in complete drawings. Resubmittals shall consists of a minimum of three (3) sets of drawings for single family residential developments, and a minimum of four (4) sets of drawings for commercial, industrial and multifamily residential developments.

e. Once the preliminary review has been completed and required revisions made, the Developer shall circulate the drawings to all utility service companies within the City and other agencies as required.

f. Prior to final approval of the construction drawings, all proposed drawings from utility service companies must be received and approved by the City. Approvals from other agencies with jurisdiction must also be received, including but not limited to the Oregon Health Division (OHD), Department of Environmental Quality (DEQ), Department of Transportation (ODOT), Marion County 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, submit a minimum of ten (10) copies of the revised drawings to the City to be stamped as approved for construction. Additional sets may be submitted at the developer's option.

i. Prior to issuance of the public 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 and the Developer's engineer.

2) Any required permit fees.

3) Recorded copies of all required off-site and on-site easements and right-of-way dedications, with the following exception. 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 can be done in conjunction with the final plat. All easements documents shall use the City's standard form, and shall include an exhibit map in addition to any legal descriptions. Legal descriptions and exhibit maps shall be submitted for City review and approval prior to recording.

4) Proposed Construction Schedule.

5) Certificates of insurance, minimum limits as outlined in the Appendix. City of Mt. Angel and City Engineer shall be named as additional insured.

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6) Evidence of Workman's Compensation coverage from contractor performing the work.

7) Any required Waiver of Remonstrance agreements.

8) Any required performance bonds.

9) Other submittals specific to this project, including approvals from applicable state agencies, such as DEQ (sewer & erosion control), OHA-DWS (water), DSL, etc.

j. Approval of plans by the City Engineer or Public Works for issuance of a 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.

1.10 SUBMITTAL REQUIREMENTS

a. Survey: All designs shall be based off of a complete topographic survey, including but not limited to the following. *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.*

1) Surface features.

2) Subsurface features.

3) Existing utilities (public and private).

4) Property lines/monuments.

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.

1) Construction drawings shall be submitted on 22" x 34" blueline or blackline sheets unless otherwise approved by the City Engineer.

2) City plan review fees as required.

3) Cover Sheet

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4) Overall drainage, utility and street lighting plan.

5) Site grading plan where applicable.

6) Plan and profile for the following public utilities:

   a) Streets

   b) Water as specified

   c) Sanitary sewers

   d) Storm drains

7) Stamped storm drainage calculations, including storm drainage basin maps.

8) Erosion control plan.

9) Standard details shall be included on the construction drawings.

10) A current title report which includes a list of all existing easements, restrictions, and other encumbrances on the property in question, including copies of any easements or other restrictive documents referenced in that report.

11) Recorded copies of all easements and right-of-way dedications required in conjunction with the project, with the exception noted under PWDS 1.9.h.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 shall be placed or constructed on the easement. Easements shall be a constant width between manholes, valves or other in-line structures. Easement width shall be based on the deepest portion of the line between such structures. See the Appendix for standard easement forms.

12) Proposed utility plans from all franchise utilities (final review).

13) Engineer's unit price construction cost estimate acceptable to the City Engineer or unit price bid results (preliminary and final review). Cost estimates shall include line items for street lighting and franchise utility trenching & conduit.

14) The submittal may also be required to include a traffic study and a traffic control plan.

15) A written summary of all deviations from the PWDS requirements, and written justification for any variance requests (see section 1.11).

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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, 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) 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.

4) **In cases where streets or public utilities exist or will be reconstructed, plan view scales shall not exceed 1" = 20'.**

5) Each plan, profile and detail shall be labeled under the drawing. The scale for the plan, profile, or detail shall be noted under the title. Details not drawn to scale shall be so noted.

6) All detail drawings, including standard detail drawings, shall be included on the drawing sheets.

7) 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.

8) Letter size shall not be smaller than 0.10-inch high.

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.

c) Developer's name, address and telephone number.

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

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site.

e) Legend including all symbols and line types used on the construction drawings.

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 the second sheet.

g) Sheet index located near lower right corner.

h) Include a summary table listing the number of lineal feet of new streets and mainline utilities to be constructed. Do not include existing streets or utilities that are being replaced as part of the project with the same length. Do not include service laterals. Identify the length of new streets and/or utilities under County or ODOT jurisdiction separately from those under City jurisdiction.

e. Overall Drainage, Utility and Street 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, Marion County or City of Mt. Angel 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.

c) Existing and proposed streets, curbs, sidewalks, handicap ramps and driveways within the project and within 150 feet of the project boundaries.

d) Existing and proposed sanitary sewers, storm drains, waterlines and appurtenances within the project and within 150 feet of the project boundaries.

e) Existing private utilities within the project and within 150 feet of the project boundaries.

f) 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.

g) Location and description of existing survey monuments, including but

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not limited to section corners, quarter corners and donation land claim corners within the limits of the work area.

h) Public and private utilities and other facilities to be relocated.

i) Street light and area light pole locations based on a photometric design acceptable to the City.

j) 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
DB	Detention Basin
S	Subsurface Disposal
→	Flow Direction

k) The location of all curb weepholes shall be shown.

l) Existing drainage patterns within the project and within 150 feet of the project boundaries.

m) Floodplain, floodway and wetland boundaries, including floodplain elevation with FEMA map reference.

f. Site Grading Plan

1) A site grading plan is required for subdivisions, multi-family, commercial or industrial developments, and partitions involving street improvements or fills.

2) A site grading plan is required for projects subject to site design review, including all commercial, industrial, or multi-family developments.

3) The site grading plan shall show proposed finished grade and parcel corner elevations, with the existing and proposed contours shown at one (1) foot intervals and extended a minimum of 100 feet beyond the improvements.

4) The site grading plan shall show all drainage systems and proposed erosion control facilities.

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g. Plan Views

1) General: Information required on the overall utility plan shall be shown on the plan views as applicable. 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 and landscape plantings within the right-of-way and easement areas.

b) Public and private utilities to be relocated.

c) Match lines with sheet number references.

d) Additional information as outlined below or as required by the City based on unique or unusual features of the project.

2) Streets

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, 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) Top of curb elevations along curb returns at quarter-points or curb return profiles.

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) Partial street improvements must be based on a full street design (ie. provide full design as if the entire street were being constructed as part of project, including design of sidewalks & driveway approaches, etc.

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on both sides), with the portion actually to be constructed as part of the project being clearly designated on the plans.

3) Storm Drains

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, junction boxes, pipelines, ditches, etc. shall be dimensioned from right-of-way centerline, easement boundary or other means so that its location is clearly defined.

e) All manholes and other structures shall be numbered and stationed to facilitate checking the plan views with the profile.

f) Alignment, size and depth at property line or easement line of proposed storm drain laterals.

4) Sanitary Sewer

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 and stationed to facilitate checking the plan views with the profile. Existing City manholes numbers shall be used for all existing manholes or mainline cleanouts shown. 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.

f) The following information shall be provided for all sanitary sewer

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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 to property corners

(7) Location of property line cleanout.

5) Water Distribution

a) Location, stationing and size of existing and proposed water mains and appurtenances.

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 and hydrants shall be dimensioned from right-of-way centerline, easement boundary or other means so that its location is clearly defined.

d) Waterline stationing shall be independent of the street stationing.

h. 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

a) Original ground 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.

b) Stationing, elevations and percent slopes for centerline or top of curb profiles.

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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) 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 restraints of the terrain.

e) The top of curb profiles for all cul-de-sacs.

f) The top of curb profiles for intersection curb returns unless elevations at quarter points are shown on the plan view.

g) 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 profiles, including cross section profiles.

3) <u>Storm Drain</u>

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 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) All existing or proposed public and 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

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downstream which affect the design (ie. size and capacity 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. Typical cross sections shall also be shown.

4) Sanitary Sewer

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 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) All existing or proposed public and private utilities crossing the profile and any existing utilities which potentially are in conflict with construction of the improvements.

5) Water Distribution

a) 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 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) 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) All existing public and private utilities crossing the profile and any existing utilities which potentially are in conflict with construction of the improvements.

i. Drainage Calculations

1) A summary of the drainage calculations, including basin maps, shall be

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presented in a clear, concise and complete manner on the site grading or drainage plan sheets. These calculations shall address all runoff into the drainage system and downstream capacity. 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.

j. Easements

1) Easements 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 sidewalks, utility vaults, light poles, mail boxes, meter boxes, fire hydrants, lateral cleanouts, etc. that are not within the public right-of-way. Since new right-of-ways typically result in the back of sidewalk being close to the right-of-way line, PUEs shall include wording that they are a "utility easement", a "public sidewalk easement", as well as a "waterline, sanitary sewer and storm drain easement to the City of Mt. Angel."

2) Private utility easements a minimum of ten (10) feet wide (centered on the utility pipe) shall be provided for all private water, sanitary sewer and storm drains outside of public right-of-ways or outside the boundaries of the property being served.

3) Recorded copies of all required easements shall be submitted prior to start of construction, with the exception noted under PWDS 1.9.h.3 for subdivisions or partitions where all public utilities will be constructed prior to the recording of a final plat.

1.11 VARIANCES TO DESIGN STANDARDS

a. Request for Variance to Specifications/Standards

1) Variances to specifications or standards may be requested as outlined below. It is to be noted that if the requested variance involves public safety, the City will rule in favor of safety.

b. Variance Process

1) Submittal

a) Requests for variance shall be submitted in writing to the City Engineer. This written request shall state the desired 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

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compromise public safety or intent of the City's Standards.

2) City's Review

a) The 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.

3) Appeal

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

c. Criteria for Variance of Specification Standards

1) The City Engineer may grant a 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 economic hardship on the applicant and an equivalent alternative which can accomplish the same intent is proposed. Variances to self-imposed hardships shall not be allowed. The variance requested shall be the minimum variance which alleviates the hardship.

b) A minor change to a specification or standard is required to address a specific design or construction problem which, if not enacted, will result in an undue hardship.

c) An alternative design is proposed which will provide a plan equal or superior to these Standards. In considering the alternative, the City Engineer shall consider appearance, durability, cost of maintenance, public safety and other appropriate factors.

1.12 PRECONSTRUCTION CONFERENCE

a. A preconstruction conference shall be scheduled before issuance of the public utility construction permits. The meeting is to include the developer's representative, developer's engineer and prime contractor, and all affected utility companies. The purpose of the conference is to discuss the construction schedule and times of the work which require special coordination.

b. The Developer shall be responsible for notifying the private utility companies of the

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time and location of the preconstruction conference, and requesting that a representative of each 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 sent to the utility companies by the Developer are acceptable.

1.13 CONSTRUCTION INSPECTION

a. General

1) All public construction associated with development shall be inspected by a professional engineer licensed in the State of Oregon or a qualified individual under his supervision as required in the Developer-City Agreement. City projects may be inspected by Public Works or the City Engineer 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 inspecting engineer. The inspecting engineer'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 inspection services for non-public funded public improvements. It shall be the Developer's responsibility to provide an engineer to perform these services.

4) These inspection 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 inspecting engineer is not warranted, the Developer may request that the City provide these services. If the City agrees to provide these services, the Developer shall be responsible to reimburse the City for any costs incurred for these inspection services.

b. City Activities

1) Inspection services provided by the City shall include:

a) Liaison between the inspection engineer 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 inspection engineer of the City's intention to do so.

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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.

a) Streets

(1) Curb inspection;

(2) Subgrade testing or proof rolls;

(3) Base rock testing;

(4) AC pavement placement and testing;

b) Sanitary Sewers

(1) Mandrel testing of mainlines;

(2) Air testing of mainlines;

(3) Vacuum testing of manholes;

(4) Video inspection of mainlines;

c) Storm Drains

(1) Mandrel testing of flexible pipe storm drains;

d) Water Distribution System

(1) Pressure tests;

(2) Disinfection.

c. Developer's Inspecting Engineer's Activities

1) The inspecting engineer of record must be registered to practice engineering in the State of Oregon. Material testing not performed by the inspecting engineer must be accomplished by a recognized testing firm or another registered engineer.

2) ***The engineer must personally perform all activities marked by an (*) and must supervise all individuals performing other delegated activities.**

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3) The following minimum activities are required of the designated inspecting engineer:

a) *Execute a form accepting responsibility:

b) *Attend preconstruction conference and distribute approved construction drawings to contractor, subcontractors and utility companies.

c) Obtain and use a copy of City-approved construction drawings and specifications;

d) Notify the City 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 changes, 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) Site Visits

(a) Date and time of site visits
(b) Weather conditions, including temperature
(c) A description of construction activities

(2) Statement of directions to change drawings, specifications, stop work, reject materials or other work quality actions;

(3) Public agency contacts which result in drawing changes or other significant actions;

(4) Perceived problems and action taken;

(5) Final and staged inspections;

(6) Records of all material, soil and compaction tests.

g) Provide all surveying services necessary to stake the project prior to and during construction.

h) Review and approve all pipe, aggregate, concrete, A.C. and other materials to ensure their compliance with City Standards;

i) *Approve all drawing or specification changes in writing and obtain City approval prior to the performance of the work;

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j) Monitor and concur in construction activities to ensure end products meet City specifications;

k) *Perform or have 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 accordance with approved drawings;

m) For pavement construction, perform the following stage inspections and record date of each:

(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 inspections and record the date of each:

(1) Sewers are installed to proper line and grade;

(2) Trenches are properly backfilled and compacted;

(3) Construction staking is adequate to ensure that the sewer is properly installed with respect to easement, right-of-way and property lines;

(4) Air testing and video inspections are performed according to standard procedures.

o) For grading, ensure that the grading plan, as staked, will result in acceptable slopes along exterior property lines, proper onsite and offsite drainage, and erosion control.

p) File a completion report which contains:

(1) The original of the project completion certification;

(2) A complete set of black-line or blue-line as-built drawings;

(3) The results of sewer and manhole tests, video inspections, waterline tests, material tests, compaction tests and soil analysis.

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q) Submit final reproducible as-built drawings conforming to the requirements outlined herein.

1.14 AS-BUILT DRAWINGS

a. As-built drawings prepared by the design engineer are required whenever the work results in new or modified public improvements and shall describe all revisions to the previously approved construction drawings.

b. Unless otherwise approved by the City Engineer, as-built drawings for sanitary sewer and storm drains shall be based off of an as-built survey conducted by a land surveyor registered to practice surveying in the State of Oregon.

c. Show all below grade private utility vaults and street crossing, as well as all above grade transformers, pedestals, etc.

d. The location of all utility stubs shall be shown on the as-builts (sanitary sewer and storm) 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.

e. The new sanitary sewer manholes and/or mainline cleanouts will be assigned 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. 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.

f. The recording references for the easement documents for all existing or required easements shall be included on the as-built drawings.

g. Legible blue-line or black-line copies of the as-built drawings shall be submitted to the City prior to the final walkthrough inspection and submittal of the mylar as-builts. Following the final walkthrough, submit approved as-built drawings on 3 mil minimum thickness mylar to the City Engineer.

h. In addition to the mylar 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. The drawing shall be in Autocad format, with lot lines and right-of-way lines each on separate layers. 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.

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