

Resolution No. 14-28

A RESOLUTION AMENDING THE CITY OF SCAPPOOSE PUBLIC WORKS DESIGN STANDARDS FOR DRIVEWAYS

WHEREAS, the City of Scappoose Public Works Design Standards apply to all new projects and redevelopment in the City; and

WHEREAS, the Design Standards include criteria for the construction of driveways; and

WHEREAS, the current Design Standards do not include a maximum slope for driveways, which has led to driveways being constructed in the City with slopes posing health and safety risks; and

WHEREAS, it is in the interest of the City to impose reasonable health and safety standards on driveway construction.

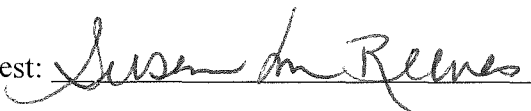
NOW, THEREFORE BE IT RESOLVED,

The City of Scappoose hereby adopts revisions to the Public Works Design Standards related to the construction of driveways in Sections 1.0080 and 5.0070, attached hereto as Exhibits A and B, respectively. Revisions are indicated with highlighting on the attached exhibits.

PASSED AND ADOPTED by the City Council this 2nd day of December, 2014 and signed by the Mayor and City Recorder in authentication of its passage.

CITY OF SCAPPOOSE, OREGON


Scott Burge, Mayor

Attest: 
Susan M Reeves, MMC, City Recorder

**CITY OF SCAPPOOSE
PUBLIC WORKS DESIGN STANDARDS**

EXHIBIT A

SECTION: 1.0000 — GENERAL

1.0010 — Authority and Purpose

In 1994 the City of Scappoose adopted the Scappoose, Oregon Public Works Design Standards and Standard Specifications. The passage of time and changes in community size and in the standard practices of the engineering community has necessitated the revision of these standards and specifications. The information contained in this document shall be known as the Scappoose Public Works Design Standards or, in the shortened version, as the Design Standards.

The purpose of these Design Standards is to provide a consistent policy under which certain physical aspects of public facility design shall be implemented. Most of the elements contained in this document are Public Works oriented and it is intended that they apply to both public improvements under City contract and public improvements made under private contract.

These Design Standards cannot provide for all situations. They are intended to assist but not to substitute for competent work by design professionals. It is expected that engineers will bring to each project the best of skills from their respective disciplines.

The Design Standards are also not intended to unreasonably limit any innovative or creative effort, which could result in better quality, better cost savings, or both. Any proposed departure from the Design Standards will be judged, however, on the likelihood that such variance will produce a compensating or comparable result in every way adequate for the user and City resident.

Alternate materials and methods will be considered for approval by the City's Engineer as the need arises and conditions warrant modification. This consideration will be on a case-by-case basis and require sufficient justification prior to approval.

1.0020 — Engineering Policy

It shall be the policy of the City of Scappoose to require compliance with Oregon Revised Statute 672 for professional engineers.

All engineering plans, reports, or documents shall be prepared by a registered professional engineer, or by a subordinate employee under the engineer's direction, and shall be signed by the engineer and stamped with the engineer's seal to indicate the engineer's responsibility for them. It shall be the engineer's responsibility to review any proposed public facility extension, modification, or other change with the City prior to engineering or proposed design work to determine any special requirements or whether the proposal is permissible. It is highly recommended that the design engineer and developer schedule a meeting with City Staff to review the proposed design before significant work is invested in the design. A "Preliminary Review" and/or a "Plans Approved for Construction" stamp of the City on the plans, etc., for any job, does not in any way relieve the engineer of responsibility to meet all requirements of the City or obligation to protect life, health, and property of the public. The plan 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.

1.0030 — Applicability

These Design Standards shall govern all construction and upgrading of all publicly and privately financed public facilities in the City of Scappoose and applicable work within its service areas.

1.0040 — Standard Specifications

Except as otherwise provided by these Design Standards, all construction design detail, workmanship, and materials shall be in accordance with the current edition of the City of Scappoose Standard Specifications and drawings.

1.0050 — Approval of Alternate Materials or Methods

Any substitution material or alternate method not explicitly approved herein will be considered for approval as set forth in Section 1.0010. Persons seeking such approvals shall make application in writing. Approval of any major deviation from these Design Standards shall be in written form. Approval of minor matters shall be made in writing if requested.

Any alternate must meet or exceed the minimum requirements set in these Design Standards.

The written application is to include, but is not limited to, the manufacturer's specifications and testing results, design drawings, calculations, and other pertinent information.

Any deviations or special problems shall be reviewed on a case-by-case basis and approved by the City's Engineer. When requested by the City, full design calculations shall be submitted for review with the request for approval.

1.0060 — Special Design Problems

Special applications not covered in these Design Standards require review and approval by the City's Engineer. Submittal of full design calculations, supplemental drawings, and information will be required prior to any approval.

Such applications, which may occur requiring special review and approval, are among, but not limited to, the following:

- | | |
|---|---|
| Sewer Force Mains | Water Distribution Pump Stations |
| Relining of Existing Sewers | Relining of Existing Water Mains |
| Internal Sealing of Existing Sewers | Water Pressure Regulating Devices |
| Sewer Regulatory Devices | Energy Dissipaters |
| Sewage Pump Stations | Water Reservoirs |
| Sewer Siphons | Water Treatment Plants |
| Sewage Treatment Plants | Water Flow Measurement/Monitoring/Telemetry Devices |
| Sewer Flow Measurement/Monitoring Devices | |

1.0070 — Revisions to Design Standards

It is anticipated that revisions to these Design Standards will be made from time to time. The date appearing on the title page is the date of the latest revision. Users should apply the latest published issue to the work contemplated.

Parenthetical notations at the end of sections indicate the most recent change to those sections. All sections without notations are from the original Design Standards as adopted. Some sections may be changed more than once and it shall be the user's responsibility to maintain his/her copy of these Design Standards with the latest changes.

1.0080 — Definitions

Alley - A public access easement or right-of-way not more than 20 feet and not less than 12 feet in width, which intersects with a public street.

Approved Backflow Prevention Assembly - A testable assembly that has been investigated and approved by the Oregon State Health Division.

Arterial Street - A major facility for moving intra-area traffic and for moving traffic to and from the freeway/expressway system. Highway 30 is Scappoose's only arterial street.

As-Built Plans - Plans signed and dated by the project engineer indicating that the plans have been reviewed and revised, if necessary, to accurately show all as-built construction details.

Average Day Demand - The total volume of water delivered to the system in one year, divided by 365 days.

Backflow - The reverse of flow from its normal or intended direction of flow. Backflow can be caused by back-pressure or back-siphonage.

Backflow Preventer - An approved testable assembly or means to prevent backflow into the potable water system.

Back-siphonage - Backflow that results from negative pressure (partial vacuum) in the supply piping system.

Bike Lanes - A designated travel-way for bicyclists, which is established within the roadway directly adjacent to the outside vehicular lane or on the shoulder.

Bike Path - A designated travel-way for bicyclists, which is completely separated from the vehicular travel lanes and is within independent rights-of-way.

Bike Route - A designated travel-way for bicyclists which is shared with vehicular traffic. The roadway is designated with signs for bicycling (no pavement markings for the bike route or delineation of parking spaces is used).

Building Fire Flow Requirements - Fire flow requirements based on type of occupancy and building material construction.

Building Service Lateral - A private sanitary sewer beginning five (5) feet outside the building and extending to the sanitary sewer main.

Building Supply - The pipe carrying potable water from the water meter or other source of water supply to a building or other point of use or distribution on the lot. Building supply shall also mean customer line.

City - The City of Scappoose, Oregon.

City's Engineer - The individual designated by the City Manager to have the authority for review and approval on all public works construction.

Collection Systems - Facilities maintained by the City of Scappoose connected thereto for the collecting, pumping, conveying, and controlling of wastewater.

Collector Sewer - The portion of the public sewerage system which is primarily installed to receive wastewater directly from individual residences and other individual public or private structures.

Collector Street - A facility that allows traffic within an area or neighborhood to connect to the arterial system.

Core - To cut and remove a portion of pipe or other structure with a circular hollow drill.

Cross Connection - Any actual or potential physical connection between a potable waterline and any pipe or vessel containing a non-potable or potable (i.e., well) fluid (suspended solid or gas) so that it is possible to introduce the non-potable fluid into the potable fluid by backflow.

Cul-de-sac - A dead-end street having a turnaround area at the end.

Curb - The line indicating the edge of the vehicular roadway within the overall right-of-way.

Curb cut - The at-grade curb, not including the wings, delineated by a concrete apron along a street.

Cut Sheets - Sheets of tabulated data, indicating stationings, structures, fittings, angle points, beginning of curve, points on curve, end of curves, storm drain slope, staking offset, various elevations, offset cuts, and storm drain depths for streets, waterlines, sanitary sewers, and storm drains.

Datum - The vertical elevation control for the City of Scappoose is "The National Geodetic Vertical Datum of 1929" which corresponds to the USC&GS 1947 Datum.

Dead-end Street - A street or series of streets, which can be accessed from only one point. Dead-end streets can be either temporary (intended for future extension as part of a future street plan) or permanent. Dead-end streets must provide adequate turn-around capability.

Definition of Words - That, whenever, 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, or order of designation of the City's Engineer. Similarly, the words "approved", "acceptable", or "satisfactory", shall mean approved by, acceptable to, or satisfactory to the City's Engineer.

Demand - The total quantity of water supplied for a given period of time to meet the various required uses. The various uses include residential, irrigation, commercial, and industrial uses as well as fire fighting, system losses, other unaccounted-for, and miscellaneous uses.

Design Intensity - The uniform rainfall intensity, inches per hour, associated with a duration equal to the time of concentration of the basin and a specified return frequency (e.g., 2 yr., 10 yr., etc.), that is used to calculate the peak discharge rate to be used for conveyance system design.

Design Storm - A rainfall event of a specified duration (e.g., 6-, 12-, 24 hr.) and return frequency (e.g., 2yr., 10 yr., etc.) that is used to calculate the runoff volume and/or discharge rate to be used for system design.

Designated Arterial or Collector Street - A street designated as an arterial or collector in the Comprehensive Plan.

Detention - The storage and subsequent release of excess stormwater runoff to control peak discharge rates prior to discharge to the storm sewer or natural drainageway.

Detention Volume - The storage volume required to control the peak discharge rates at the point of discharge from a development.

Development – Any activity that makes a material change in the use or appearance of a structure or land, including partitions and subdivisions as provided in Oregon Revised Statutes 92 and 227.215.

Direct Discharge – Any stormwater discharge from a developed site, which has not passed through approved water quality treatment prior to its ultimate outfall to a natural drainageway, wetland or other natural resource area.

Domestic Sewage - The liquid and water borne waste derived from the ordinary living processes, free from industrial wastes, and of such character to permit satisfactory disposal, without special treatment, into the public sewer or by means of private sewage disposal system.

Double Check Valve Assembly - An assembly composed of two single, independently acting, approved check valves, including tightly closing shut-off valves located at each end of the assembly and fitted with properly located test cocks.

Double Check - Detector Check Valve Assembly - A line-sized, approved, double check valve assembly with a parallel meter and meter-sized, approved, double check valve assembly. The purpose of this assembly is to provide backflow protection for the distribution system and, at the same time, provide a metering of the fire system showing any system leakage or unauthorized use of water.

Drainage Facilities - Pipes, ditches, detention basins, creeks, culvert bridges, etc., used singularly or in combination with each other for the purpose of conveying or storing storm water run-off.

Drywell – See Stormwater sump.

Easement - Areas located outside of dedicated rights-of-way, which are granted to the City for special uses and public facilities.

Engineer - The engineer, licensed by the State of Oregon as a Professional Engineer, under whose direction plans, profiles, and details for the work are prepared and submitted to the City for review and approval, or who is in charge of and responsible for construction of the improvement.

Expansion Joint - A joint to control cracking in the concrete surface structure and filled with preformed expansion joint filler.

Fire Hydrant Assembly - The fire hydrant and attached auxiliary valve.

Fire Protection Service - A metered connection to the public water main intended only for the extinguishment of fires and the flushing necessary for its proper maintenance.

French Drain or Leach Line - A covered underground excavated trench filled with washed gravel that surrounds a perforated delivery pipe used to receive storm water, wherein the sides and bottom of the trench are porous, permitting the storm water to seep into the ground.

Grade - The degree of inclination of a road or slope expressed in percent, that is, rise over run times 100.

Hydrant Lead - The waterline connecting the fire hydrant to the auxiliary valve on the City distribution main.

Impervious Areas - Those hard surface areas located upon real property which either prevent or retard soaking of water into the land surface and cause water to run off the land surface in greater quantities or at an increased rate of flow from that present under natural conditions before any development.

Industrial Waste – Solid, liquid, or gaseous waste resulting from any industrial, manufacturing, trade, or business process or from development, recovery, or processing of natural resources.

Interceptor Sewer - The primary public sanitary sewer which conveys wastewater directly into the Wastewater Treatment Plant or into a larger interceptor sewer.

Irrigation Service - A metered connection intended for seasonal use and for delivering water for irrigation purposes, which is not discharged to the sanitary sewer.

Lateral Sewer - A building service lateral.

Local or Residential Street - A facility designated to serve primarily direct access to abutting land and offers the lowest level of traffic mobility. Through-traffic movement is deliberately discouraged.

Longitudinal Joint - A joint, which follows a course approximately parallel to the centerline of the roadway.

Major Partitioning - A partition which includes the creation of a road or street.

Major Trees - "Major trees" within the right-of-way are those which have a 12" caliper or larger. Street improvement plans will identify major trees by location, caliper, and species.

Major tree species are those which contribute to the landscape character of the area to include; e.g., Douglas fir, cedar, redwood, sequoia, oak, ash, birch, walnut, maple. The identification of major trees should distinguish species generally suitable for retention adjacent to streets and those species with growth habits that create nuisances, unusual maintenance problems, or hazards to the public.

Major trees exist in clusters, groves, or rows within the right-of-way.

Manager - The City Manager of the City of Scappoose acting either directly or through authorized representatives.

Manufacturer's Name - Any manufacturer's name, specification, catalog, number or type used herein is specified by make and order to establish the standard requirements of the City. It is understood that other equivalent makes will be considered for approval, providing they are comparable with this established standard.

Maximum Day Demand - The maximum volume of water delivered to the system in any single day of the year, divided by one day.

Minor Partition - A partition, which does not include the creation of a road or a street.

Natural Grade - The grade of the land in an undisturbed state prior to any development activities.

On-Site Detention - The detention of stormwater from a private storm drain in a privately owned and maintained storm system to provide a controlled release, at or below a maximum allowable rate, to the public storm drain system.

Outfall – The point at which collected concentrated stormwater is discharged, generally from a pipe(s), from a project site to an open drainage element such as a ditch, channel, swale, stream, river, pond, lake or wetland.

Owner - The owner of record of real property as shown on the latest tax rolls or deed records of the county, and includes a person who furnishes evidence that he is purchasing a parcel of property under a written recorded land sale contract.

Partition - To divide an area or tract of land into two or three parcels within a calendar year when such area or tract of land exists as a unit or contiguous units of land under single ownership at the beginning of such year.

Peak Hour Demand - The maximum volume of water delivered to the system in any single hour of the year, multiplied by one hour.

Person – Individual, firm, corporation, association, agency, or other legal entity.

Peak Run-off - The maximum stormwater run-off rate(cfs) determined for the design storm, or design rainfall intensity.

Plans - Construction plans, including system plans, sewer plans, and profiles, cross sections, detailed drawings, etc., or reproductions thereof, approved or to be approved by the City's Engineer, which show the location, character, dimensions, and details for the work to be done, and which, when approved, constitute a supplement to these standards.

Potable Water - Water, which is satisfactory for drinking, culinary, and domestic, purposes and meets the requirements of the health authority having jurisdiction.

Private Collection System - A privately owned and maintained lateral sewer system installed to serve multi-unit structures on single ownership properties that cannot legally be further divided.

Private Storm Drain - A storm drain, located on private property, serving more than one structure or parking lot on the same premises.

Projected Maximum Day Demand - The maximum volume of water anticipated to be delivered to the system in a future single day of a year, divided by one day.

Public Sanitary Sewer - Any sewer, in public right-of-way or easement, operated and maintained by the City for carrying sewage and industrial wastes.

Public Storm Drain - Any storm sewer, in public right-of-way or easement, operated and maintained by the City.

Release Rate - The controlled rate of release of drainage, storm, and run-off water from property, storage pond, run-off detention pond, or other facility during and following a storm event.

Retention – The process of collecting, holding, and infiltrating surface and stormwater runoff, with no outflow, from a developed property.

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 public for sidewalk, utility, and/or roadway purposes which the City has sole responsibility to maintain.

Roadway - All of that portion of the right-of-way used or to be used for vehicle movement that exists between the curbs, proposed curb lines, or edges of pavement.

Sedimentation - Deposition of erosion debris or soil transported by water from a higher elevation to an area of lower gradient.

Sewage - A combination of the water-carried wastes from residences, business buildings, institutions, and industrial establishments, except industrial wastes.

Sidewalk - A walk or raised path along the side of a road for pedestrians. A right-of-way deeded, dedicated, and designated for the use of non-motorized vehicles and pedestrians. In almost all cases, a sidewalk will be hard surfaced portland cement concrete or asphaltic concrete.

Silt - Fine textured soil particles, including clay and sand, as differentiated from coarse particles of sand and gravel.

Siltation - Deposition of (silt) waterborne sediments - fine textured sedimentation - terms used to describe the smoothing or cementing effect of a blanket of silt deposited over sand and gravel areas used by migratory fish for spawning (includes colloidal material when the transporting water evaporates).

Soakage Trench - A linear trench, usually filled with clean drain rock, designed to infiltrate stormwater. Soakage Trenches may be either an injection system with a perforated pipe carrying stormwater into the trench below grade or a surface infiltration system.

Standard Drawings - The drawings of structures or devices commonly used on public improvements and referred to on construction plans.

Stormwater Sump - A drainage facility (or system) designed to utilize the infiltration capability of the ground, commonly referred to as percolation, to dispose of surface and stormwater runoff. A drywell.

Streets or Roads - Any public highway, road, street, avenue, alley, way, easement, or right-of-way used or to be used for vehicle movement.

Structures - Those structures designated on the standard plans such as catch basins, manholes, etc.

Subdivision - To divide an area or tract of land into four or more lots within a calendar year when such area or tract of land existed as a unit or contiguous units of land under a single ownership at the beginning of such year.

Superelevation - The vertical distance between the heights of the inner and outer edges of highway pavement.

Swale - A broad bottomed, shallow, vegetation lined channel, which allows for reduced flow velocity and filtration of stormwater, generally with flow depths less than one foot.

Total Fire Flow - A combination of building fire flow requirements, any internal system fire flow requirements (e.g., sprinklers), and domestic maximum day demand (highest 24-hour consumption within the last three years).

Transverse Joint - A joint which follows a course approximately perpendicular to the centerline of the roadway.

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

Treatment Volume - The storage volume necessary to provide the required level of water quality treatment of stormwater prior to discharge to a storm sewer element, facility or natural drainage element.

Turnaround Area - A paved area of sufficient size and configuration that a motor vehicle may maneuver so as to travel in the opposite direction.

Trunk Sewer - (Interceptor) A sanitary sewer which is primarily intended to receive wastewater from a collector sewer, another trunk sewer, an existing major discharge of raw or inadequately treated wastewater, or water pollution control facility.

Uniform Building Code – The Uniform Building Code adopted by the International Conference of Building Officials (current edition), as revised by the State of Oregon, called the “Structural Specialty Code.”

Uniform Plumbing Code - The Uniform Plumbing Code adopted by the International Association of Plumbing and Mechanical Officials (current edition), as revised by the State of Oregon, called the "Oregon State Plumbing Specialty Code".

Wastewater - The total fluid flow in the sanitary sewerage system, which includes industrial waste, sewage, or any other waste (including that which may be combined with any ground water, surface water, or storm water) that may be discharged into the sanitary sewerage system.

Water Distribution System - Water distribution pipelines, pumping stations, reservoirs, valves, and ancillary equipment used to transmit water from the supply source to the service line.

Water Main - The water-supply pipe for public or community use.

Water Service Line - The pipe connection from the City water main to the metering device, hydrant, or fireline backflow prevention assembly.

Wet Weather Season – Defined for the purposes of construction and development in the City of Scappoose as the period between October 1st and the following June 1st.

Wetlands - Those lands adjacent to watercourses or isolated therefrom which may normally or periodically be inundated by the waters from the watercourse or the drainage waters from the drainage basin in which it is located. These include swamps, bogs, sinks, marshes, and lakes, all of which are considered to be part of the watercourse and drainage system of the City and shall include the headwater areas where the watercourse first surfaces. They may be, but are not necessarily, characterized by special soils such as peat, muck, and mud.

1.2000 — Construction Plans

1.2010 — General Information

Prior to any construction work and plan approval, complete construction plans, specifications and all other necessary submittals shall be submitted to the City's Engineer for review and approval.

1.2020 — Plan Preparation

Construction plans and specifications shall be prepared as specified in Sections 1.2021 - 1.2034 by a professional engineer licensed in the State of Oregon.

1.2021 — Sheet Size

All construction plans shall be clearly and legibly drawn in ink on reproducible medium measuring 22 x 34 inches. Sheets shall have a 1-1/2 inch clear margin on the left edge and a 1/2-inch margin on all other edges.

Half scale plans, on 11 X 17 inch sheets, may be used only with permission of the City's Engineer.

1.2022 — Scale of Plans

When plans are prepared for developer-financed projects, the following scale of drawings is required.

Plan/Scale	Horizontal	Vertical
Street	1" = 20'*	1" = 2'
Sewer	1" = 40'	1" = 4'
	1" = 50'	1" = 5'
Storm Water	1" = 40'	1" = 4'
	1" = 20' or 40'**	1" = 4'

*Subdivision street plans, when combined with other proposed facilities listed above, may be drawn at 1" = 40' scale.

**When a scale is used which is smaller than 1" = 20' (i.e., 1" = 40') intersection details showing fittings and valving shall be provided at a larger scale.

Architectural scales (e.g., 1/4" = 1'0") are not permitted.

Subdivision public facility plans for single-family attached units shall be drawn at 1"=20' scale.

1.2030 — Required Sheets

Construction plan submittals shall contain the following minimum sheets: title sheet (unless not required by the City's Engineer) plan and profile sheet(s), and detail sheet(s). All sheets shall contain an approval block as shown below:

<p>Approved By:</p> <p>_____ Date _____</p> <p>Planning Services Manager</p> <p>Approved By:</p> <p>_____ Date _____</p> <p>City Engineer or Delegate</p> <p>These plans are approved for construction subject to the revisions as noted. All work must be in conformance with the City of Scappoose Public Works Design Standards and Standard Specifications and with the City of Scappoose Municipal Code and does not relieve the Engineer of Record of responsibility for the design.</p>

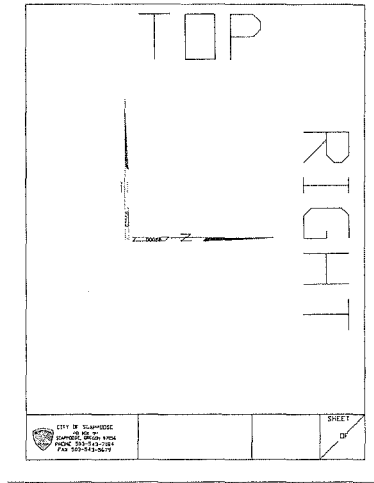
1.2031 — Title Sheet

All subdivision projects and multiple sheet improvement projects shall have a title sheet as the first page of the construction plans. This sheet shall contain the following minimum information:

- a. Site plan of entire project with street right-of-way and/or subdivision layout at a 1" = 100' scale. A 1" = 200' scale may be used if project size is too large. The site plan shall also be a composite utility plan showing all properties served by proposed sewer, water, and storm facilities, in addition to the proposed facility.
- b. Vicinity map at a 1" = 1000' scale or greater.
- c. Index of sheets.
- d. Complete legend of symbols used.
- e. General and construction notes pertinent to project.
- f. Temporary and/or permanent benchmarks used along with their descriptions, elevations of benchmark, and datum.
- g. Engineer's name, address, phone number, and seal.
- h. Developer's/owner's name, address, and phone number for public improvements with private financing.
- i. Statement referencing City of Scappoose Standard Specifications.
- j. Provide contact phone number for all affected utility companies and pertinent City personnel.
- k. Show tax lot numbers or lot and block designations.

1.2032 — Plan Sheet

The plan view of each sheet shall be drawn at the appropriate scale with the north oriented to the top or right edge of the drawing and showing the following minimum information:



a. Adjacent street curbs, property lines, right-of-way lines, utility easements referenced to property lines, street centerlines, and intersections. Show property corner and curb elevations to determine water service level, serviceability of lot/property for sanitary sewer, points of disposal for building storm drains, and how new curbs will join to existing curbs.

b. Location of all underground utilities within 100 feet of project (if they are affected by the project), existing power/telephone poles and guy anchors, valves, manholes, catch basins, fire hydrants, meter boxes and vaults, signs, etc.

c. Location of all water courses, railroad crossings, culverts, bridges, large water transmission pipes and gravity sewers, and/or storm drains within 200 feet of proposed gravity sewer and storm drain extensions if they affect the design of the project. All watercourses shall show the 100-year flood plain as indicated on the U.S. Army Corps of Engineers and Federal Emergency Management Agency (FEMA) maps.

d. On sewer and storm drain plans, each manhole, catch basin, and cleanout shall be numbered and stationed. Stationing shall tie to existing street monuments, property corners, or manholes. Each line shall be stationed continuously upgrade on the plan sheet. Each separate line shall be separately designated (e.g., sewer line 'A', storm line 'A', etc.).

e. On street plans, horizontal stationing shall show points of tangency and curvature for centerline; curve data shall show tangent length, radius distance, centerline curve length, and delta angle. Centerline intersection stationing, in both directions, shall be shown.

f. Where streets are being widened, edge of pavement elevations shall be shown to determine pavement cross-slope to new curb or pavement edge.

g. Elevations and contours shall be based on City of Scappoose datum only.

1.2033 — Profile Sheet

Profiles for construction plans shall be the same horizontal scale as the plan sheet. Where profiles are drawn on the same sheet as the plan view, the profile shall be immediately below the plan

view. Stationing shall be continuously upgrade from left to right with lower stations to the left (except where stationing on the plan view is from right to left in which case the stationing in the profile shall align with the plan view). The following minimum information shall be shown:

a. For sewers and storm drains, show locations of manholes, catch basins, and cleanouts, with each numbered and stationed as indicated in Section 1.2032(d).

b. Existing profile at centerline of proposed utility or street, plus 100 feet each direction from end of proposed street.

c. Proposed profile grade, as appropriate, for all sewers, storm drains, and waterlines, giving pipe size, length between structures or fittings, slope, backfill and pipe material, sewer inverts, rim elevations, etc.

d. Existing underground utility that crosses the alignment of the proposed facility.

e. Beginning of all vertical curves, points of vertical intersection, end of vertical curve, low point of sag curve, and length of vertical curve. Profiles of existing centerline grade shall extend a minimum of 100 feet beyond the end of the improvement.

f. Clearly show all potential conflicts with existing public and private utilities (i.e., pipes, conduits, vaults, cathodic protection systems, etc.) that impact proposed design.

SPECIAL NOTE: City of Scappoose as-builts are only to be used as an aid to the engineer. When a potential conflict may occur, the engineer shall field locate, or cause to be located, and verify the alignment, depth, and inverts of all existing facilities shown on the plans that will be crossed by the proposed facility.

1.2034 — Detail Sheets

Standard detailed drawings shall be included on a separate sheet(s) with all construction plans. If a standard drawing does not exist, or if a Standard Drawing, such as sewer manholes, must be modified to fit existing or unique conditions, the modified drawing shall be shown on the plans. When appropriate, due to required detail complexity, a separate detail sheet shall be drawn. It is the intent of the City of Scappoose that all appropriate details be included on the plans not simply referenced on the plans.

1.2040 — Supporting Information

The engineer shall submit sufficient supporting information to justify the proposed design. Such information shall include, but not be limited to, the following:

- a. Design calculations.
- b. For storm drains, hydrology and hydraulic calculations with basin maps.
- c. Alternate materials specifications including manufacturer's design application recommendation.
- d. Grading plan support information to include as appropriate:

- (1) Soils engineering report
- (2) Hydrology report
- (3) Engineering geology report
- (4) Geotechnical Report

- e. A description of the stormwater facility, including its intended functionality, and an explanation of how the outlet(s) function to meet peak discharge control and water quality treatment control requirements.
- f. Downstream Analysis

- (1) An analysis shall be performed to determine the potential impacts from the project on the downstream system. At a minimum, the downstream analysis will include the area from the project site to a point, to be determined by the city, downstream of the project site. The analysis must proceed far enough along the drainage course to determine that nothing downstream of the end point will be adversely affected by the project's runoff. Refer to section 2.0027, Downstream Analysis Report, for a detailed description of how to perform a downstream analysis.
 - (2) For waterline systems, water model calculations.
- g. All calculations and design data shall be submitted in a sealed engineering report, not as loose calculations and drawings.

1.2041 — Facility Plan

When designing sanitary or storm sewer facilities, a facility plan shall be submitted with the construction plans when required by the City's Engineer. This plan shall be used to identify, analyze, and facilitate the logical extension of proposed facilities. The topographic plan shall show all upstream and tributary areas within no less than 200 feet of the proposed development.

The plan shall include existing contours at two (2) foot intervals (1 foot or even .5 foot contour intervals may be appropriate for very flat sites), or as approved by the City, including location of existing structures and public and private utilities.

1.2042 — Erosion Control Plan

The erosion control plan shall address the measures as required by the Erosion Prevention and Sediment Control Planning and Design Manual¹. Construction projects beginning prior to June 1st or those projects anticipating construction activity between October 1st and June 1st will be required to submit a plan addressing "wet weather" measures as outlined in the ECTGH. Construction activity is assumed as "active" until all permanent vegetation and/or erosion protection is established.

The plan shall include existing contours at two (2) foot intervals (1 foot or even .5 foot contour intervals may be appropriate for very flat sites), or as approved by the City, including location of erosion control facilities (i.e., silt fence, straw mulch, sediment ponds, etc.); outlet structures (i.e., catch basins, culverts, creeks, etc.); and existing public and private utilities.

1.2043 — Maintenance Plan

A maintenance plan shall be submitted for City review and approval for all privately financed private or public detention, retention and water quality facilities. The plan shall include both type(s) and frequency of maintenance activity required.

1.2050 — Plan Submittal

Construction plans for all privately financed public works facility improvements shall be submitted to the City's Engineer. The City's Engineer will coordinate the plan review and approval of all construction plans which will include review for compliance with all Scappoose Public Works Standard Specifications, the Scappoose Community Development Plan, City Code, Ordinances, and any relative Master Plan.

All plan submittals shall include information required in Section: 1.2040 and 1.2041 of these Design Standards along with all other information requested by the City's Engineer. This information is to include, but not be limited to, construction cost estimates, easement documents, right-of-way dedications,

¹ Developed by Unified Sewerage Agency of Washington County, Water Environment Services of Clackamas County, and City of West Linn, as updated.

executed agreements, and processing and review fees. All submittals will be reviewed for completeness and the engineer notified if required information is missing. Submittals should be made in a timely manner as lack of information to the City may impede the review process.

1.2060 — As-Built Plan Requirements

For all public works facility improvements the engineer shall submit certified as-built drawings for all plans which were approved for construction, within 3 months of project completion. As-built drawings shall meet the requirements of Sections 1.2020, 1.2030 and 1.2060 - 1.2064 of these Design Standards and shall be of archival quality. At a minimum, the drawings shall be 4 mil Mylar with silver halide emulsion. Original inked mylars may also be submitted in lieu of photographic mylars. An electronic copy of all drawings shall also be submitted in Auto CAD format.

The engineer shall submit, along with the As-built drawings, a statement certifying that all work for which plans were approved has been completed in accordance with the Scappoose Public Works Design Standards and Specifications.

The words "As-Built Drawing" shall appear both as the last entry in the revision block along with the month, day, and year the as-built drawing was prepared as well as in large letters on the face of each sheet.

All sheets that were part of the original approved design plan set shall be submitted as part of the as-built drawings, including title and detail sheets.

NOTE: Actual location and depth from finish grade of any other utilities encountered during construction shall be shown and noted on both plan and profile of the as-built plans.

1.2061 — Street

The following minimum information shall be noted on street as-built drawings:

- a. Change in horizontal alignment, curve data, and stationing of primary control points (e.g., PC, PI, PT, PRC).
- b. Vertical curve or grade changes; change in location of low point in sag vertical curve.
- c. Change to approved thickness for street structural section components. Show station limits where changes in structural section have occurred.
- d. Change to driveway locations or widths.
- e. Other change altering the approved plans.

1.2062 — Storm Drains

The following minimum information shall be noted on storm drain as-built drawings:

- a. Station of connection into main line if not in a manhole. Tie end of branch line to nearest property corner at right-of-way line and distance back from the face of curb.
- b. Show alignment changes, grade changes, and changes in construction materials. If changed alignment results in station changes, a station equation shall be shown as appropriate at a manhole.
- c. Other change altering the approved plans.

d. Show the design and tested flow for all drywell installations in a table on the storm plan sheet indicating the drywell number, size, and depth.

1.2063 — Sanitary Sewer

The following minimum information shall be noted on sanitary sewer as-built drawings:

- a. Station of wye or tee into main line. Tie end of service lateral to both adjacent property corners at right-of-way line.
- b. Depth at the end of service lateral measured from existing ground to invert of pipe and invert elevations shall be noted (to the nearest 0.1 foot).
- c. Length of service lateral measured from centerline of sewer main to end of pipe.
- d. Show alignment changes, grade changes, and changes in construction materials. If changed alignment results in station changes, a station equation shall be shown as appropriate at a manhole.
- e. Other change altering the approved plans.
- f. Provide complete test results to the City's Engineer.
- g. Type of pipe, backfill material and location.
- h. Inverts of all pipes and the rims of all manholes shall be determined by survey and certified by the engineer.

1.2064 — Water Main

The following minimum information shall be noted on water main as-built drawings:

- a. Station and/or property line/corner to valves (not at standard location), all fittings, blow-offs, and dead-ended lines.
- b. All changes from standard 36-inch depth cover. Limits shall be shown on plan with annotated reason for change. Actual pipe elevation (top of pipe) will be taken at every fitting.
- c. Show alignment changes, grade changes, and changes in construction materials. If changed alignment results in station changes, a station equation shall be shown as appropriate at a fitting.
- d. Other change altering the approved plans.
- e. Provide design calculations and complete test results to the City's Engineer.
- f. Actual location and depth, from finish grade of street, of any other utilities encountered during construction.

1.2070 — Easements

When topography or other conditions make impractical the location of drainage facilities, sanitary sewers or water lines within the street right-of-way, an unobstructed easement shall be provided across the property with satisfactory access to the street. These easements shall be a minimum of 15 feet for lines 12 inches or smaller and shall be 20 feet for lines over 12 inches. Larger easement widths may be required for special circumstances, such as excessively deep pipe or location of building to the

easement. All easements must be furnished to the City's Engineer for review and approval prior to recording. See also Scappoose Municipal Code, Section 17.154.050.

5.0010 — General Design Requirements

Performance Standards - All street designs shall provide for the safe and efficient travel to the motoring public. Streets shall be designed to carry the recommended traffic volumes identified for each street classification. Street classifications are set forth in the Scappoose Transportation System Plan, December 1997, as updated.

Streets shall be designed to meet or exceed minimum guidelines. These guidelines are set forth in the "AASHTO Policy on Geometric Design of Highways and Streets" (latest edition). Traffic Control Devices shall conform to the "Manual on Uniform Traffic Control Devices for Streets and Highways," Federal Highway Administration, with Oregon Supplements, Oregon Department of Transportation (latest edition).

All vertical and horizontal curves shall meet the guidelines of the AASHTO Policy and the design speed for each street classification. Where practical, the Design Engineer shall provide the decision sight distance for the design speed based on the methodology in AASHTO Chapter IX, or the stopping sight distance based on the 85% speed as set forth in the AASHTO policy, whichever is greater. Only with the approval of the City Engineer shall a lesser sight distance be permitted.

5.0011 — Right-of-Way and Pavement Width

Right-of-way and pavement widths for each street classification shall be as follows:

	<u>Right-of-Way</u>	<u>Pavement Width</u>
Principal/Major Arterial	100'	74'
Minor Arterial	72'	44'
Major Collector	66'	44'
Minor Collector	60'	36'
Local: Residential	54'	32'
Local: Commercial & Industrial	54'	40'
Cul-de-sac	50'	32'a
Cul-de-sac Turnaround	55' radius	45' radius
Alley	20'	20'

- Notes: a. In the Sensitive Lands -- Slope Hazard Areas, right-of-way width may be 40' and pavement width may be 28' with approval of the City's Engineer
 b. Right-of-way dedication at intersections shall be along the "long cord"

On streets with raised island medians, the minimum curb-to-curb pavement width shall be twenty feet (20') per travel direction.

For streets designated collector and below, the Planning Services Manager together with the City's Engineer may consider design modifications to conserve major trees in the public right-of-way. Pavement width on a collector street may be reduced to no less than thirty-two feet (32').

5.0012 — Access

All development shall be provided public street access. Access roads (public and/or private), driveways, and easements shall be as set forth in other sections of these Design Standards.

5.0013 — Traffic Analysis

The City's Engineer will require a traffic analysis report as determined by the type of development and its potential impact to existing street systems. A traffic analysis will generally be

required for a development, 1) when it will generate 1,000 vehicle trips per weekday or more, or 2) when a development's location, proposed site plan, and traffic characteristics could affect traffic safety, access management, street capacity, or known traffic problems or deficiencies in a development's study area.

The report will be prepared by a traffic engineer licensed in the State of Oregon. At a minimum, the report shall contain the following:

1. Purpose of Report and Study Objectives

A discussion of key traffic issues to be addressed and the transportation system and development objectives related to a specific development.

General transportation system objectives are:

- to maintain easy and safe traffic flow on surrounding street system;
- to provide effective and safe transfer of vehicle traffic between the site and the street system;
- to provide convenient, safe and efficient on-site and off-site movement of vehicles, pedestrians, transit, service and delivery vehicles, and bicycles;
- to effectively mitigate adverse site-generated traffic impacts on affected streets and intersections. Site-specific objectives may be established by the City for each study;
- to analyze accident history in study area and evaluate impacts of site-generated traffic.

2. Executive Summary

A concise summary of the study purpose/objectives, site location and study area, development description, key assumptions, findings, conclusions and recommendations.

3. Description of Site and Study Area Roadways

A description of the site and study area, existing traffic conditions and accident history in the study area, and anticipated nearby development and committed roadway improvements which would affect future traffic in the study area.

The study area will be defined by:

All roads, ramps, and intersections through which peak hour site traffic composes at least 5% of the existing capacity of an intersection approach, or roadway sections on which accident character or residential traffic character is expected to be significantly impacted.

4. On-site Traffic Evaluation

An evaluation of the proposed (and alternative) site access locations, the adequacy of access drive depth, driveway lanes, and queuing storage, the safety and efficiency of proposed vehicular circulation, parking layout, pedestrian and service vehicle routes/facilities, together with recommendations for on-site traffic markings and controls.

5. Offsite Traffic Analysis

The analysis shall include:

a. Existing daily and P.M. peak hour counts by traffic movements at intersections effected by generated traffic from the development (use traffic flow diagrams).

b. Projected daily and P.M. peak hour volumes for these same intersections and proposed access points when the development is in full service. (Use traffic flow diagrams)

c. A determination of the existing levels of service and projected levels of service at each intersection and access points studied.

d. A discussion of the need for traffic signals. This should include a traffic warrant computation based on the National Manual on Uniform Traffic Control Devices.

e. The recommendations made in the report should be specific, and should be based on a minimum level of service "D" with maximum volume to capacity (v/c) ratio of 0.90 when the development is in full service. As an example, if a traffic signal is recommended, the recommendation should include the type of traffic signal control and what movements should be signalized. If a storage lane for right turns or left turns is needed, the recommendation should include the amount of storage needed. If several intersections are involved for signalization and an interconnect system is considered, specific analysis should be made concerning progression of traffic between intersections. For stop-controlled intersections, a minimum level of service "E" shall be required on the minor approach. Level of service shall be based on the current edition of the TRB Highway Capacity Manual and the associated Highway Capacity Software. The manager may approve other methods.

f. The report should include a discussion of bike and pedestrian usage and the availability of mass transit to serve the development.

6. Recommendations for Public Improvements

Recommendations should be made for external roadway improvements, such as additional through lanes and turn lanes, and traffic control devices necessitated as a result of the development. Recommended improvements to transit facilities, and pedestrian and bike circulation should also be reported.

The recommendations should specify the time period within which improvements should be made, particularly if improvements are associated with a phased development, the estimated cost of improvements, and any monitoring of operating conditions and improvements that may be needed. If needed street improvements unrelated to the development are identified during the analysis, such improvements should be reported.

7. Access Management

On sites with arterial and collector street frontages, the report shall evaluate and recommend the use of access management plans or techniques:

to separate basic conflict areas (reduce number of driveways or increase spacing between driveways and intersections);

to remove turning vehicles or queues from the through lanes (reduce both the frequency and severity of conflicts by providing separate paths and storage area for turning vehicles and queues).

These techniques may include turn restrictions, striping, medians, frontage roads, channelization of lanes or driveways, shared driveways and access between similar uses, access consolidation, lanes for left or right turns, and other transportation system management (TSM) actions.

8. Technical Appendix

A technical appendix including worksheets, charts, and drawings to support findings described in the body of the report. Include computer diskette with all HCS input and output files matching that provided in the traffic analysis report. The files shall be clearly identified on the disc and cross-referenced in the appendix for easy reference.

5.0014 — Intersections

Connecting street intersections shall be located to provide for traffic flow, safety, and turning movements, as conditions warrant. Where signalized, design shall provide for optimal signal phasing. Consideration for arterial street progression, protected/permitted and permitted left turn phasing shall occur. New signal proposals in remote locations shall first include an evaluation of alternate applications such as Roundabouts.

Arterial Intersections: Exclusive left turn lanes will be provided; bus turnouts will be provided where appropriate; crosswalks will be provided at all approaches; street alignments across intersections shall be continuous.

Neighborhood Collector and Local Street Intersections: Street and intersection alignments should facilitate local circulation but avoid alignments that encourage non-local, through traffic.

Streets shall be aligned so as to intersect at right angles (90°). Angles of less than 70° will not be permitted. Intersection of more than two streets at one point will not be permitted.

New streets shall intersect with existing street intersections so that centerlines are not offset, except as provided below. Where existing streets adjacent to a proposed development do not align properly, conditions may be required of the development to provide for proper alignment.

For intersections, which are not directly aligned with street centerlines, the centerline spacing must meet the following minimum separation distance:

<u>Street Class</u>	<u>Intersection Spacing (Ft.)</u>
Principal/Major Arterial	500*
Minor Arterial	400*
Major Collector	300*
Minor Collector	150
Local/Cul-de-sac	100

*The City's Engineer may permit a minimum spacing of not less than 300 feet (Principal/Major Arterial), 200 feet (Minor Arterial), 200 feet (Collector), when findings are made to establish that:

1. Without the change, there could be no public street access from the parcel(s) to the existing street, or
2. The change is necessary to support local pedestrian, bicycle circulation and access, and
3. The change is necessary due to topographic constraints, and
4. All other provisions of the street design requirements can be met.

5.0015 — Substandard Street Construction

A. **Half-Street Construction** Half-street construction is generally not acceptable. Where such a street is justified, the right-of-way and pavement width will be approved by the City Engineer. In no case shall the pavement width required be less than that required to provide two lanes of traffic to pass at a safe distance. For a 32-foot local street, the half-street pavement width will be 20-feet. Half-streets will only be approved when the abutting or opposite frontage property is undeveloped and the full improvement will be provided with development of the abutting or opposite (upon right-of-way dedication) frontage property.

A development on an unimproved substandard street shall be responsible for constructing a continuous, 20' wide half street to a connection with the nearest publicly owned right-of-way.

In cases where an existing street is to be improved, the improvement shall be to at least the centerline of the street or 20' wide which ever is more.

B. **Private Access Way Construction** Development on an unimproved access way shall be responsible for constructing a continuous 12' wide pavement to the nearest publicly owned right-of-way. On a case-by-case basis, the City Engineer may approve the construction of 24" wide paved treads in-lieu of a 12' wide pavement.

5.0016 — Street Classification

All streets within the City shall be classified as listed in the Scappoose Transportation System Plan, December 1997, as updated. The classification for any street not listed shall be that determined by the Manager.

5.0017 — Design Speed

Design speeds for classified streets shall be as follows:

Principal/Major Arterial	35 - 45 mph
Minor Arterial	35 - 40 mph
Major Collector	25 - 30 mph
Minor Collector	25 mph
Local	25 mph
Cul-de-sac	25 mph
Public Alley	10 mph

* Where existing traffic conditions identify 85% speeds in excess of design speeds listed, then the 85% speed will be used for design purposes.

5.0020 — Horizontal/Vertical Curves, and Grades

5.0021 — Horizontal Curves

Horizontal curve radius (on centerline) for each street classification shall be designed according to the roadway design speed. The radius shall not be less than the following:

Principal/Major Arterial	600 - 750'
Minor Arterial	415 - 600'
Collector	165 - 275'
Neighborhood Collector	165'
Local: Queuing Street	165'
Local	100'
Cul-de-sac	100'
Public Alley	55'

In no case shall a horizontal radius of less than 55 feet be permitted on any public or private road or access way.

5.0022 — Vertical Curves

Vertical curve length shall be based on the design criteria which include: (1) design speed, (2) crest vertical curve, and (3) sag vertical curve. Stopping sight distance for crest and sag vertical curves shall be based on sight distance and headlight sight distance, respectively.

All vertical curves shall be parabolic and the length shall be computed for each location.

5.0023 — Grades

Maximum grades for each street classification shall be as follows:

Arterial	0.060 ft./ft.	(06%)
Major Collector	0.080 ft./ft.	(08%)
Minor Collector	0.100 ft./ft.	(10%)
Local/Cul-de-sac	0.120 ft./ft.	(12%)
Local Residential	0.120 ft./ft.	(12%)
Local Commercial & Industrial	0.120 ft./ft.	(12%) (no exceptions)
Public Alley	0.120 ft./ft.	(12%) (no exceptions)

Local and cul-de-sac streets may exceed 12%, but in no case shall they exceed 15%. The City's Engineer may approve a grade greater than 12% when all of the following conditions exist:

1. Topographic constraints do not allow the development to be served by a street with a maximum grade of 12% without causing destabilization of soils by excessive cuts and fills.
2. There is no practical access to the property being developed through adjacent properties at a maximum 12% grade.
3. The section of local street will not exceed a combination of length, horizontal alignment, and/or grades exceeding 12% which will create hazardous traffic conditions.
4. In no case shall the maximum street grade exceed 15%.

Minimum grade for all streets shall be 0.0050 feet per foot (0.50%) however, in all cases street grades shall allow for proper and adequate drainage. Cul-de-sac "bulbs" shall have a minimum slope of 0.0060 feet per foot (0.60%).

5.0030 — Pavement Design

In general, all streets shall be constructed with asphaltic concrete (AC) or Portland Cement Concrete (PCC).

The Engineer will provide a street structural design section for all streets.

DESIGN CRITERIA

- **Street Pavements** -- The street pavement sections shown in the Standard Detail Drawings are typical: full-depth asphalt concrete, asphalt concrete with crushed rock base, Asphalt Concrete with treated base, and Portland Cement Concrete. Treated sub grades in the pavement section are also acceptable.
- **Soil Tests** -- Conduct two soil tests for projects that have 500 feet or less of new street. An

additional soil test is required for each additional 500-foot section. For all pavements, determine the California Bearing Ratio (CBR) within the top 2 feet of the proposed subgrade elevation.

- **Design Life** -- 50 years.
- **Design Procedure - Asphalt Pavements** -- The design procedures contained in the following references are preferred. (See the **References** section for full citations.)

AASHTO Guide for Design of Pavement Structures, 1986. American Association of State Highway and Transportation Officials (as updated).

Thickness Design - Asphalt Pavements for Highways and Streets. The Asphalt Institute, September 1991 (MS-1) (as updated).

- **Design Procedure – Portland Cement Concrete Pavements** -- The design procedures contained in the following references are preferred. (See the **References** section for full citations.)

AASHTO Guide for Design of Pavement Structures, 1986 (as updated).

Thickness Design for Concrete Highway and Street Pavements. Portland Cement Association, 1984 (as updated).

- **Minimum Thickness** -- The minimum thickness designs specified in the standard details are only a point of reference. All projects are subject to a specific thickness design based upon existing soil conditions, the projected 20-year traffic volume, and an expected 50-year life.
- **Local Streets, Asphalt Pavement** -- Specify Type "C" surface course with a minimum thickness of 1.5 inches. Specify the base course of asphalt concrete as Type "B" with a minimum thickness of 1.5 inches.
- **Arterials and Collectors, Asphalt Pavement** -- Specify Type "B" wearing surface with a minimum thickness of 1.5 inches. Specify the base course of asphalt concrete as Type "B" with the appropriate calculated design thickness.
- **Treated Base Materials** -- For asphalt pavement sections that include either a cement treated base (CTB) or an asphalt treated base (ATB), specify a finish surface pavement of not less than 3 inches of asphalt concrete.

5.0040 — Concrete Curb

All street improvements will be constructed with Monolithic Curb and Gutter. Standard Curb, as shown in the Standard Drawings, may only be used when the cross slope of roadway drains away from curb such as with raised median construction. Curb exposure for Standard Curb is seven (7) inches and nine (9) inches at catch inlets. Curb exposure for monolithic curb and gutter shall be six (6) inches and eight (8) inches at catch inlets. Joint spacing in curbs shall be 15-foot maximum for contraction joints. In addition, expansion joints shall be located at all curb return points and at driveway curb-drop transition points.

A minimum of two drainage block-outs to accommodate 3" drain pipe shall be provided for each lot. These block-outs shall be located five feet (5') from each side of property line.

Section 5.0041 — Curb Return Radius

Curb return radius at street intersections shall be designed to accommodate all expected traffic. Curb extensions and/or special crosswalk/sidewalk features designed to enhance pedestrian safety may be required to encourage pedestrian usage. Minimum curb radius required shall be as follows:

<u>Intersection</u>	<u>Radius</u>
Local/ with Minor Collector or Local	20'
Local/ with Major Collector or Arterial	30'
Minor Collector with Collector or Arterial	30'
Collector/Arterial with Collector/Arterial	30'

Streets serving commercial/industrial properties may be required to install larger curb radius as required for vehicle movements.

5.0042 — Parking

<u>Street Class</u>	<u>Parking Lanes</u>	<u>Parking Required</u>
Principal/Major Arterial	None	May be allowed in some areas
Minor Arterial	None	May be allowed in some areas
Major Collector	2	Variable (1) (2)
Minor Collector	2	Yes
Local: Residential	2	Yes (3) (4)
Local: Commercial & Industrial	2	Yes (3)
Cul-de-sac	2	Yes (5)
Public Alley	None	Not Allowed (6)

1. Where bike lanes exist on collectors, parking may be prohibited.
2. Collector - No parking within 45' of curb return.
3. Local - No parking within 30' of curb return.

4. Local Streets in the Sensitive Lands -- Slope Hazard Areas, which are approved for reduced 40 feet right-of-way and 28 feet pavement, will be required to have one parking lane; to assure that on-street parking is adequate for adjacent uses, a reduced street design will consider clustered parking bays adjacent to the street, if needed.

5. Cul-de-sac - No parking allowed within the 35' radius cul-de-sac turnaround.

For streets designated collector and below, the City's Engineer may consider design modifications to conserve major trees in the public right-of-way. Subject to approval by the Community Development Director, parking lanes may be removed on one or on both sides of a street.

5.0050 — Sidewalks

In general, new sidewalks with curbs are required for all development requiring a development permit. Sidewalks on Arterial Streets shall be buffered from the roadway to provide for the safety and comfort of pedestrians. Where planter strips are required, sidewalks shall be six (6) inches off the right-of-way line (except cul-de-sacs). Where no planter strips are required, sidewalks shall abut curbs.

MINIMUM SIDEWALK WIDTH:

<u>Street Class/Location</u>	<u>Curb Tite</u>	<u>6" Off R/W</u>	<u>[Notes]</u>
Arterial:		6'	All uses
Collector: Major	6'		
Minor	6'		
Local: Residential	5'		40' R/W - Residential Hillside
Commercial & Industrial	6'		
Public Alley			No sidewalk required
Cul-de-sac:	5'		Residential
	5'		40' R/W - Residential Hillside
	6'		Constraint
			Commercial/Industrial
Bus Stop	8'		

Sidewalks may meander within the dedicated right-of-way or outside of the right-of-way within an easement with the approval of the City's Engineer.

Sidewalks shall have a maximum slope 1:12 and a cross slope no greater than 1:50. Where steeply sloped roadways and constrained right-of-way precludes a running slope of 1:12, the least possible running slope shall be provided. Sidewalks shall be constructed with a continuous passage of 5' clear of all obstructions, including poles, mailboxes, sign-posts, etc. With City Engineer's approval, utilities with facilities in the sidewalk may locate their facilities to be in conformance with a 36" minimum horizontal clearance. A 7' vertical clearance above the sidewalk shall be maintained.

Include handrails or fences to protect pedestrians when there is a vertical drop of 6" or greater at back of sidewalk.

5.0051 — Sidewalk Ramps

All intersections shall contain 2 sidewalk ramps per corner. In retrofit areas, one ramp may be located at the midpoint of the curb return with approval by the City's Engineer. Sidewalk ramps shall meet all applicable guidelines of the Americans with Disabilities Act (ADA).

Locations of sidewalk ramps shall be designed with regard to storm water flows, street grades, and pole locations. Other factors may also dictate sidewalk ramp location.

See Standard Detail Drawing No. **514** for additional details.

5.0060 — Bikeways

The City has adopted the Scappoose Transportation System Plan, December 1997, which includes a Bicycle/Pedestrian Plan. This plan summarizes the City's policy and implementation strategies for bikeways within the City. The City will use both AASHTO and ODOT standards and criteria as the minimum guidelines for bikeway design, construction, and control.

The guidelines for bikeways consist of the following:

1. AASHTO, "Guide to Development of Bicycle Facilities," latest edition.
2. ODOT, "Oregon Bicycle & Pedestrian Plan", latest edition.
3. Manual on Uniform Traffic Control Devices with Oregon supplements by Oregon Transportation Commission, latest edition.

Section 5.0061 — Bikeway Location, Width

<u>Bikeway Location</u>	<u>Width</u>	<u>Comments</u>
Public Street (designated bike lane)	6 ^{**}	Each direction of travel at shoulder/curb
Public Street (non-designated bike lane)	13' 14'	One way pavement width – minimum One way pavement desirable
Off-street Bicycle Path	5 [*]	One-way travel
Off-street Bicycle Path	8' - 10 [*]	Two-way travel
Off-street Bicycle Path (shared with pedestrians)	12 [*]	Two-way travel
Off-street Bicycle Path (shared with pedestrians)	7 [*]	One-way travel

* Paths are constructed with 2' gravel shoulders on both sides.

** A six-foot section is required unless this width is not practical because of physical or economic constraints. A minimum width of four feet may be designated as a bicycle lane.

5.0062 — Design Criteria

In general, bikeway design shall meet the adopted standards referred to in Section 5.0060.

All bikeways shall have a minimum cross-slope of two percent (2%) and a maximum cross-slope of five percent (5%).

Bikeway curvature will be based on a minimum design speed of 20 MPH.

Bikeway grades shall be limited to a maximum of five percent (5%). Where topography dictates, grades over five percent (5%) are acceptable when a higher design speed is used and additional width is provided.

5.0063 — Construction

Off-street bikeways shall be constructed for two different situations where limited maintenance vehicle (City-owned) use will occur, and where heavy maintenance vehicle use will occur. In both cases, subgrade preparation will require removal of existing organic material and compaction.

<u>Bikeway Thickness</u>		
<u>Use</u>	<u>Asphalt</u>	<u>Aggregate</u>
Limited	4"	6"
Heavy	6"	8"

Bikeway Thickness		
Use	Portland Cement Concrete	Aggregate
Limited	4"	6
Heavy	6"	8

When drainage such as side ditches is required parallel with the bikeway, the ditch centerline shall be at least five feet (5') from the edge of the pavement. Ditch side slope adjacent to the bikeway shall be no steeper than 2:1 when measuring the horizontal distance to the vertical distance.

When culverts cross bikeways, the ends of the pipe shall be no closer than five feet (5') from the edge of the bikeway.

5.0070 — Driveways

Access to private property shall be permitted with the use of driveway curb cuts. The access points with the street shall be the minimum necessary to provide access while not inhibiting the safe circulation and carrying capacity of the street. Driveways shall meet all applicable guidelines of the Americans With Disabilities Act (ADA).

Access to and from off-street parking areas shall not permit backing onto a public street, except for single-family dwellings.

Curb cuts, including wings, cannot encroach on the clearance of a utility pole or fire hydrant. There must be sufficient clearance on each side of a pole or hydrant, as determined by the City Engineer.

No driveway shall traverse a slope greater than (14) percent, at any point along the driveway length.

On arterial and collector streets and above, one driveway per site frontage will be the normal maximum number. Double frontage lots and corner lots on these streets may be limited to access from a single street, usually the lower classification street. If additional driveways are approved by the City's Engineer, a finding shall be made that no eminent traffic hazard would result and impacts on through traffic would be minimal. Restrictions may be imposed on additional driveways, such as limited turn movements, shared access between uses, closure of existing driveways, or other access management actions. Commercial developments with frontage greater than 250 feet may request an additional driveway if needed.

TABLE 5-1

Driveway Widths (Minimum/Maximum, Ft.)

Street Classification	Res.	Comm.	Ind.
Principal/Major Arterial:	NA (1)	12/36	12/36
Minor Arterial:	12/24 (2)	12/36	12/36
Major Collector:	12/24 (2)	12/36	12/36
Minor Collector:	12/24 (2)	12/36	12/36
Local:	12/24 (2)	12/36	12/36

Cul-de-sac:	12/24 (2)	12/36	12/36
Public Alley	12/24 (2)	NA	NA

Res. = Residential Zone
Comm. = Commercial Zone
Ind. = Industrial Zone

Notes: (1) Special conditions may warrant access.
(2) 28' maximum with 3-car garage.

TABLE 5-2

Minimum Driveway Spacing to intersecting R-O-W*

Street Classification	Residential	Commercial	Industrial
Principal/Major Arterial (2)	100' (1)	100' (1)	100' (1)
Minor Arterial (2)	100' (1)	100' (1)	100' (1)
Major Collector (2)	45' (1)	100' (1)	100' (1)
Minor Collector (2)	45' (1)	100' (1)	100' (1)
Local (all)	45' (1)	45'	45'
Cul-de-sac	45' (1)	45'	45'
Public Alley	45' (1)		

Notes: (1) Minimum distance or no closer than 60% of parcel frontage unless this prohibits access to the site, in which case City Engineer may approve a deviation.

(2) Direct access to this street will not be allowed if an alternative exists or is planned.

* Driveways shall not be constructed within the curb return of a street intersection.

Curb cuts shall be a minimum of five feet from the property line, unless a shared driveway is installed. Deviation may be approved by the City Engineer.

For roads with a classification of Collector and above, driveways adjacent to street intersections shall be located beyond the required queue length for traffic movements at the intersection. If this requirement prohibits access to the site, a driveway with restricted turn movements may be permitted.

Within commercial, industrial, and multi-family areas, shared driveways and internal access between similar uses are encouraged to reduce the access points to the higher classified roadways, to improve internal site circulation, and to reduce local trips or movements on the street system. Shared driveways or internal access between uses will be established by means of common access easements at the time of development.

Multi-family access driveways will be required to meet the same access requirements as commercial driveways if the multi-family site generated 100 or more trips per day.

5.0080 — Street Lighting, Trees, Names and Signage

5.0081 — Street Lighting

A complete street lighting system shall be the responsibility of new development. All streets fronting the property shall be provided adequate lighting as determined by the City. For lighting

requirements, all developments will be required to submit a lighting plan to the City's Engineer. The lighting plan shall conform to IES (Illuminating Engineering Society) standards.

Street lights shall conform to Standard Drawings # 527, 528, 529, 530, and 532. Infill development utilizing existing utility poles will use Standard Drawing # 529.

5.0082 — Street Trees See Scappoose Development Code, Chapter 17.104.

5.0083 — Street Names and Traffic Control Signage and Striping

Street names for all new development will be approved by the City and Fire Chief prior to recording of any maps or plats. The development shall install or pay for all street name and traffic control signage prior to the signing of the final plat or map by the City. A “signage and striping plan” shall be included with plan submittals for new street construction.

Street names and building numbers shall conform with the established grid system(s) in the City and metropolitan area. No new street name shall be used which will duplicate or be confused with the name of existing streets in the metropolitan area.

5.0090 — Permanent Dead-end Streets

A standard cul-de-sac turnaround shall be provided at the end of a permanent dead-end street that does not provide looped circulation. Permanent dead-end streets shall be limited to serving no more than twenty-five dwellings and shall not exceed six hundred feet in length from the point of the nearest centerline/centerline intersection.

A permanent dead-end street is measured from the right-of-way line at the nearest intersecting street which has at least two points of access, to the right-of way line at the furthest end of the dead-end street.

5.0100 — Alleyways and Private Residential Streets/Accessways

5.0101 — Alleyways

Alleyways - Commercial and Industrial:

Alleyways may be provided in commercial and industrial developments with approval by the City’s Engineer and Planning Services Manager. When approved, alleyways shall be dedicated to the City. The right-of-way width shall be 20 feet with a 20-foot pavement width.

Design for alleyways shall meet the same criteria as other public streets. The exception to those criteria may be centerline radius and design speed. Generally, alleyways shall be designed for one-way operation.

Alleys - Residential Districts:

To serve development, alleys allow for efficient lot use, support front yard pedestrian orientation, landscape spaces, and reduced lot coverage by driveways. Alleys serve as a common driveway, for access, utilities, and deliveries.

1. **Limits:** Alleys must be constructed continuously from one street to a parallel or intersecting street. All lots must have frontage to a public street. If there are parking restrictions on the public street, additional parking spaces must be provided off of the alley.

2. **Pavements:** The standard design for residential district alleys shall consist of 20’ of pavement within a 20’ right-of-way. Pavement shall drain to the center with an inverted crown.

5.0102 — Private Residential Accessways

In general, private residential streets and accessways shall be provided for multi-family developments such as condominiums and apartments. The standards for private residential accessways include:

1. Dead-end accessways shall not exceed 600 feet in length nor serve more than 25 dwelling units. Dead-end access ways, which exceed 150 feet in length, shall be provided with an approved fire turnaround.

2. "PRIVATE STREET" signage and driveway approach shall be placed at the intersection with the public street to clearly identify the private accessway.

3. Private maintenance of the private streets/access ways shall be provided by a Homeowner's Association or other appropriate entity. Maintenance shall insure continual emergency access at all times.

4. Location of private accessways shall meet the Uniform Fire Code and meet the minimum depth pavement section of local residential streets except they may use an inverted crown.

5. Private residential accessways shall not be allowed in Manufactured Home Subdivisions.

5.0110 — Local Street Design for Adverse Topography

Local streets shall have a cross-section slope of 2.5% ("crown") in accordance with Standard Drawing No. 500, except in situations of adverse topography. The Design Engineer may utilize an "offset" or unequal crown section when the existing ground slope exceeds 8.00% across the roadway section.

The offset crown design shall meet the following conditions:

1. Minimum distance from "crown" to (one) face of curb is 10.00 feet.
2. Maximum cross-slope of pavement is 5.00%.
3. Maximum differential in top of curb elevation from one side to the other is 1.00 foot.

The existing ground "side-slope" criteria are based on the relationship of the slope of the ground to the transverse slope of the roadway profile. This relationship shall be met for the entire length of the roadway alignment utilizing an offset crown.