

CITY OF VERNONIA PUBLIC WORKS DESIGN STANDARDS

SECTION 1.0000 - GENERAL

1.0010 - AUTHORITY AND PURPOSE

The Vernonia Comprehensive Plan addresses land use and development issues within the City. This comprehensive planning document is a single document with references to many Ordinances. The Vernonia Comprehensive Plan and Subdivision Ordinance regulates the divisions of land and the creation of public facilities. The "Design Standards" section of the Subdivision Ordinance, discusses generalized public facility design requirements.

The purpose of these Design Standards is to provide a consistent policy under which certain physical aspects of public facility design will 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 under private contract designated herein.

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 limit unreasonably 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 variances will produce compensating or comparable result, in every way adequate for the user and City residents.

Alternate materials and methods will be considered for approval by the City 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. (See Section 1.0050)

1.0020 - ENGINEERING POLICY

It shall be the policy of the City of Vernonia to require compliance with Oregon Revised Statute Chapter 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. 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 public and privately financed public facilities in the City of Vernonia 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 APWA Standard Specifications for Public Works Construction, Oregon Chapter.

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 deviation from these Design Standards will be in written form. Approval of minor matters will 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, reason and justification, and other pertinent information.

Any deviations or special problems shall be reviewed on a case-by-case basis and approved by the City 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 Engineer. Submittal of full design calculations, supplemental drawings and information will be required prior to any approval.

Applications requiring special review and approval may include, but are 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
Sewer Flow Measurement/Monitoring Device	

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 bottom of each 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 Back flow Prevention Device - A device that has been investigated and approved by the Oregon State Health Division.

Arterial Street - A street intended to carry large volumes of traffic at steady speeds with minimum interruptions to traffic flow.

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 and changes.

Back flow - The flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable supply of water from any sources other than its intended source.

Back flow Preventer - A device or means to prevent back flow into the potable water system.

Back Siphonage - The flowing back of used, contaminated, or polluted water from a plumbing fixture or vessel into a water supply pipe due to a negative pressure in such pipes.

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

Bike Path - A designated travel-way for bicycling which is completely separated from the vehicular travel lanes and is within independent right-of-ways.

Bike Route - A designated travel-way for bicyclist 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 are used).

Building Service Lateral - A public sanitary sewer beginning at the property line or public easement line and extending to the sanitary sewer main.

Building Sewer - A private sanitary sewer beginning five (5) feet outside the building and extending to the property line or public easement line, connecting to the building service lateral.

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 Vernonia, Oregon.

City Engineer - The individual (a registered professional engineer) designated to have the authority to review and approve all public works design and construction projects.

Collection Systems - Facilities maintained by the City of Vernonia 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 waste water directly from individual residences and other individual public or private structures.

Collector Street - Street which forms the boundary of major blocks of land and is intended primarily for inter-neighborhood traffic; can function as a road to service areas from the arterial system.

Core - To cut and remove a circular portion of concrete, pavement, pipe or soil.

Cross Connection - Any connection or arrangement, physical or otherwise, between a potable water supply system and any plumbing fixture or any tank, receptacle, equipment or device, through which it may be possible for non potable, used, unclean, polluted and contaminated water, or other substances, to enter into any part of such potable water system under any condition.

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.

Cut Sheets - Sheets of tabulated data, indicating stationing, 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, water lines, sanitary sewers, and storm drains.

Datum - The vertical elevation control for the City of Vernonia 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.

Permanent dead-end streets must provide adequate turnaround capability.

Definition of Words - Whenever the words "directed," "required," "permitted," "ordered," "designated," or words of like importance are used in these Standards, they shall be understood to mean the direction, requirement, permission, or order of designation of the City Engineer. Similarly, the words "approved," "acceptable," or "satisfactory," shall mean approved by, acceptable to, or satisfactory to the City Engineer.

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

Detention - The holding of runoff for a short period of time and then releasing it to the natural water course where it returns to the hydrologic cycle.

Domestic Sewage - The liquid and waterborne 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 Back flow 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 runoff.

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

Engineer - The engineer, including the City's 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 management 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.

Hydrant Lead - The water line 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 saturation 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 preexisting to 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 resource.

Interceptor Sewer - The primary public sanitary sewer which conveys waste water directly into the Waste Water Treatment Plant.

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

Lateral Sewer - A building service lateral.

Local or Residential Street - A street designated to provide vehicular access to abutting properties and discourage through traffic.

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

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

Major Trees - Trees within the right-of-way are those which have a caliper of 4" 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: Douglas Fir, Cedar, Redwood, Sequoia, Oak, Ash, Birch, Walnut, Maple. The identification of major trees should distinguish species generally suitably 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.

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. Other equivalent makes will be considered for approval, providing they are comparable with this established standard.

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.

On-Site Detention - The storage of excess runoff on the development site prior to its entry into a public storm drain system and gradual release of the stored runoff after the peak of the runoff has passed.

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/she 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 Runoff - The maximum water runoff rate (cfs) determined for the design storm.

Person - Individual, firm, corporation, association, agency, or other entity.

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 Engineer, which Shows the location, character, dimensions, and details for the work to be done, in which constitute a supplement to these standards.

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

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

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

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

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

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

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 which exists between the curbs or proposed curb lines.

Sedimentation - Disposition of erosional debris, soil sediment transported by water from a higher elevation to an area of lower gradient where sediments are deposited as a result of slack water.

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

Sidewalk - A walk or 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.

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

Siltation - Deposition of (silt) waterborne sediments.

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

Streets or Roads - Any public highway, road, street, avenue, alleyway, 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.

Super elevation - The vertical distance between the heights of the inner and outer edges of a highway pavement.

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.

Turnaround Area - An 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 waste water from a collector sewer, another trunk sewer, an existing major discharger of raw or inadequately treated wastewater, or water pollution control facility.

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

Waste Water - 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, valves, and ancillary equipment used to transmit water from the supply source to the service line.

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

Water Service Line - The pipe connection from the City water main to the users' water meter, hydrant, back flow prevention device, or fire sprinkler double check valve.

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 vegetation or soils such as peat, muck, and mud.

1.0090 - CONSTRUCTION PLANS

1.0091 - 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 Engineer for review.

1.0100 - PLAN PREPARATION

Construction plans and specifications shall be prepared as specified in Sections 1.0091 - 1.0134 by a professional engineer licensed in the State of Oregon.

1.0101 - SHEET SIZE

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

1.0102 - SETS OF PLANS

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

<u>Plan/Scale</u>	<u>Horizontal</u>	<u>Vertical</u>
Street	1" = 20**	1" = 2'
Sewer	1" = 40'	1" = 4'
Storm	1" = 40' or 20'	1" = 4'
Water	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 (i.e., 1/4" = 1'-0") are not permitted unless approved.

1.0130 - REQUIRED SHEETS

Construction plan submittals shall contain the following minimum sheets: title sheet (unless not required by the Superintendent of Public Works) plan and profile sheets, detail sheets.

1.0131 - TITLE SHEET

All subdivision projects and multiple street 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 plans of the 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 and all easements. The site plan shall also include all adjacent public facilities within 100' of the proposed project.
- 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 bench marks used along with their descriptions, elevations of benchmark and datum.
- g. Engineer's name, address and phone number & seal.
- h. Developer's/owner's name, address and phone number for public improvements with private financing.
- i. Statement referencing City of Vernonia Design Standards and the latest edition of the APWA Standard Specifications for Public Works Construction, Oregon Chapter.
- j. Provide contact phone number for all affected utility companies.
- k. Show tax lot numbers or lot and block designations.

1.0132 - PLAN SHEET

The plan view of each sheet shall be drawn at the appropriate scale 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 and 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 ft. of the 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 water courses shall show the 100-year flood plain as indicated on the UPS. Army Corps of Engineers and Federal Emergency Management Agency (F.E.M.A.) maps.
- d. On sewer and storm drain plans, each manhole, catch basin, and clean-out shall be numbered and stationed. Stationing shall tie to existing street monuments, property corners or manholes. Each line shall be stationed continuously upgrade and go from left to right 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 tangent 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. On water plans, all fittings shall be shown and identified by type (i.e., MJ x MJ, FLG X MJ, etc.). Fire hydrants and intersection details for valves and fittings are required when scale of plans is smaller than 1" = 20' (i.e., 1" = 40'). All valves, fittings and pipe conditions shall be indicated.
- h. On erosion control plans, the location of silt fences, inlet barriers, gravel entry ways, temporary ditches and detention ponds and surface preparation shall be shown. The plan shall show the entire development. Details of erosion control devices can be shown on this sheet.

1.0133 - 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. The following minimum information shall be shown:

- a. For sewers and storm drains, show locations of manholes, catch basins, and clean outs with each numbered and stationed as indicated in Section 1.0132(d).
- b. Existing profile at centerline of proposed utility or street.
- c. Proposed profile grade, as appropriate, for all sewers, storm drains and water lines giving pipe size, length between structures, slope, backfill type, surface restoration type, and pipe materials, 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 250 feet beyond the end of the improvement.
- f. Clearly show all potential utility conflicts with appropriate pipes, conduits, vaults, etc. that affect proposed design.

SPECIAL NOTE: The City of Vernonia 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.

1.0134 - DETAIL SHEETS

Detailed drawings shall be included with all construction plans where City of Vernonia Standard drawings do not exist. If a standard drawing 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. When City standard drawing appurtenances or construction installations are to be used, a reference to the specific Standard Drawing number shall be made on the title sheet.

1.0140 - 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:

Design calculations.

Hydrology and hydraulic calculations with basin maps.

Alternate materials specifications including manufacturers' design application recommendations.

Plan support information to include as appropriate:

1. Soils engineering report
2. Hydrology report
3. Engineering geology report

1.0141 - UTILITY PLAN

When designing sanitary or storm sewer facilities, a utility plan shall be submitted with the construction plans when required by the Superintendent of Public Works. This plan shall be used to identify and analyze the extension of the 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 one (1) foot intervals, or as approved by the City. Include location of existing structures and public and private utilities.

1.0150 - PLAN SUBMITTAL

Construction plans for all privately financed public works facility improvements shall be submitted to the City. The City Engineer will coordinate the plan review and approval of all construction plans which will include review for compliance with all Vernonia Design Standard, utility master plans, City Code and Ordinances.

All plan submittals shall include information required in Sections: 1.0140 and 1.0141 of these Design Standards along with all other information requested by the Superintendent of Public Works. This information shall include, but is not limited to, construction cost estimates, easement documents, right-of-way dedications, and executed agreements. 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.

1.0160 - 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. As-built drawings shall meet the requirements of Sections 1.0100, 1.0130 and 1.0160 - 1.0164 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 on Mylar sheets. In addition one (1) set of blue line as-builts shall be submitted.

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 Vernonia Public Works Design Standards and Standard Specifications and design documents.

The words "As-Built Drawing" shall appear as the last entry in the revision block along with the month, day and year the as-built drawing was prepared.

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

1.0161 - STREET

The following minimum information shall be noted on the street as-builts

- 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(s) altering the approved plans, including but not limited to; curbs, sidewalks, wheelchair ramps and lighting.

1.0162 - STORM DRAINS

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

- a. Station of wye or tee into main line. Tie each 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(s) altering the approved plans, including but not limited to; catch basin location, manhole location, pipe size, dry well location, etc.

1.0163 - 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 each end of service lateral to nearest property corner at right-of-way line, and distance back from the face of curb.
- b. Depth at the end of service lateral measured from existing ground to invert of pipe. When required by the City Engineer, invert elevations shall be noted.
- c. Length of service lateral measured from centerline of sewer main to end of pipe.
- d. Show alignment changes, grade changes, pipe size 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 Engineer.
- g. Type of pipe, backfill material and location.

1.0164 - 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 30-inch depth cover. Limits shall be shown on all plans with annotated reason for change. Actual pipe elevation (top of pipe) will be taken at each fitting.
- c. Show alignment changes, grade changes, pipe size changes and changes in construction materials, if changed alignment results in station changes. A station equation shall be shown as appropriate at a valve.
- d. Provide manufacturer of all valves identify types of fittings (i.e., MJ X MJ, FLG x MJ, etc.); provide information in the form of an inventory list on construction drawings.
- e. Other change altering the approved plans.
- f. Provide complete test results to the City Engineer.
- g. Provide photographs of all installed valves and fittings in place before backfill.