



**DEVELOPMENT
REVIEW
DRAFTING
STANDARDS
CITY OF VANCOUVER
TRANSPORTATION
SERVICES
(WITHIN PUBLIC RIGHT OF WAY &
PRIVATE STREETS ONLY)**



June 2007

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I. OVERVIEW

The City of Vancouver Transportation Services has prepared standards to aid the developer's engineers in the production of engineering plans for the transportation review process for the Development Review Services of the City of Vancouver within public right of way and private streets. Any work being done outside of the public right of way and along private streets does not need to follow these standards. The intent is to assemble all files in a consistent fashion to provide ease of use and transfer of information and to reduce the number of reviews.

Text that is "*italicized*," represents other departments in the city and is not part of these standards. Check with the other departments if they have a standard they would like you to follow.

It is required that all drawings prepared for Transportation Services review follow these standards. The complexity of designs prepared for Transportation Services review and the need for many different individuals to work on drawings will continue to increase. The standard framework provided in this document will facilitate and expectations the communication between consultants and Transportation Services.

These standards are not intended to cover every possible situation encountered in the production of AutoCAD drawings. Many applications will require some interpretation and innovation by the drafters and engineers.

The City of Vancouver Transportation Services will review and update the Drafting Standard manual, Standard Detail drawings and the Transportation General Notes once a year or when a major revision is required. Minor revisions and corrections will be made as needed, revision dates listed herein and the most current information will be posted on the City's web site and ftp site, so prior to working on a project for the city, check either of these sites for the latest information.

These standards only cover information for of the Transportation Development Review process. Contact other departments for their requirements if they have any. You may include information from other departments on the design plans though keep in mind the complexity of your project on what you have on each drawing.

II. DISCLAIMER

The City of Vancouver Transportation Services is providing Drafting Standards electronic files and hard copies for City's Transportation Development Review. The Drafting standards are compiled based on the City's Standards to provide consistency for design submittals. The recipient of these files is expected to use independent professional judgment in its use of these drafting Standards; they are not intended to be used for design purposes. The City does not accept **responsibility** for changes or modifications made by the recipient of these electronic files. The recipient is solely responsible for the output produced by these standards in the event of such a change or modification. It will be the responsibility of the recipient of the electronic files to notify the City Transportation Development Review Manager for any discrepancies or clarifications in the standards. The recipient of these files is not permitted to distribute them to other users.

III. GENERAL STANDARDS

Software

City of Vancouver Transportation Services currently uses 2008 AutoCAD and Civil 3d. All drawings submitted to the City of Vancouver must be prepared using AutoCAD software or comparable design software packages that AutoCAD can reference or import such as Micro Station DGN files or DXF files. The earliest version of AutoCAD files that can be accepted is Release 2000.

Standard Engineering Plans

City of Vancouver standard drawing sheets are 22 x 34 inches.

The north arrow should always be pointed at the top or to the right of the sheet (10 degrees into the northwest quadrant through 10 degrees into the southwest quadrant). Stationing should run South to North or West to East.

Completion of As Built Plans

When project is completed and turned in to DRS for “As Builts”, send a CD(s) with entire project information that includes base maps and the individual sheets. They can be all in one drawing using model space and paper space (layouts) or individual drawings. The base maps shall be on our coordinate system (see Section IV of this manual for additional information. For changes done from the “Mylars” that are submitted to the “As Built” stage of project, use revision clouds around those changes. For Traffic Signal submittals, see page 31 of this manual.

Correspondence/Disk or CD Labeling

All correspondence is expected to look professional. In letters, please include the project number, contact name, and subject to be addressed.

Disks or CDs must be labeled with the project number, date, and contents. If more than one disk is provided, the disks should be labeled as Disk x of y.

Blocks, Linetypes, and Standard Detail Sheets

This manual includes AutoCAD blocks (symbols) and linetypes for both Transportation Services and the other departments of the City of Vancouver and municipalities. The only blocks and linetypes that Transportation Services request that you use are the ones that apply to streets, signing/stripping, lighting (within public right of way) and traffic signals. If your firm doesn't use AutoCAD, contact Roger Waters at (360)487-7712 or email roger.waters@ci.vancouver.wa.us and he will work with you in figuring out a way to export the symbols out to the type of program that you use.

In regards to the other departments and municipalities blocks and linetypes, verify with them if they require you to follow their blocks and linetypes.

Blocks

Transportation Services Standard Blocks are listed and shown on the drawing “**Standard Symbols**”, see page 7 (“DRS_SYMBOLS-L1.DWG”).

Linetypes

Transportation Services Standard Linetypes are listed and shown on the drawing “**Standard Linetypes, Hatches, Text and Symbols**”, see page 8 (“DRS_SYMBOLS-L2.DWG”).

ACAD menu

Transportation Services has a customized AutoCAD menu that allows you to insert our blocks on the correct layers and give you easy access to the files. If you wish to have a copy of this file, please contact Roger Waters at (360)487-7712 or email roger.waters@ci.vancouver.wa.us and he will send you a file.

Standard Plans (Details)

A note within the “Transportation General” notes using the date of the most current adopted standard plans (details). In future submittals, an updated list of the Transportation notes will be sent with the mark ups of your plans. For Signal, Signing/Striping and Lighting plans we request that the Standard Plans be part of the submittal.

Transportation related standard plan sheets, cover sheets, title blocks, borders, blocks, linetypes and fonts are provided on a CD, at the City’s FTP site and website. The Standard Plans are in AutoCAD 2000 and PDF format.

For the most up-to-date electronic versions of the information listed above, check the City of Vancouver’s

WEB site at:

<http://www.cityofvancouver.us/transreview.asp?menuid=10463&submenuID=17481&itemID=19572>

Or our FTP site at:

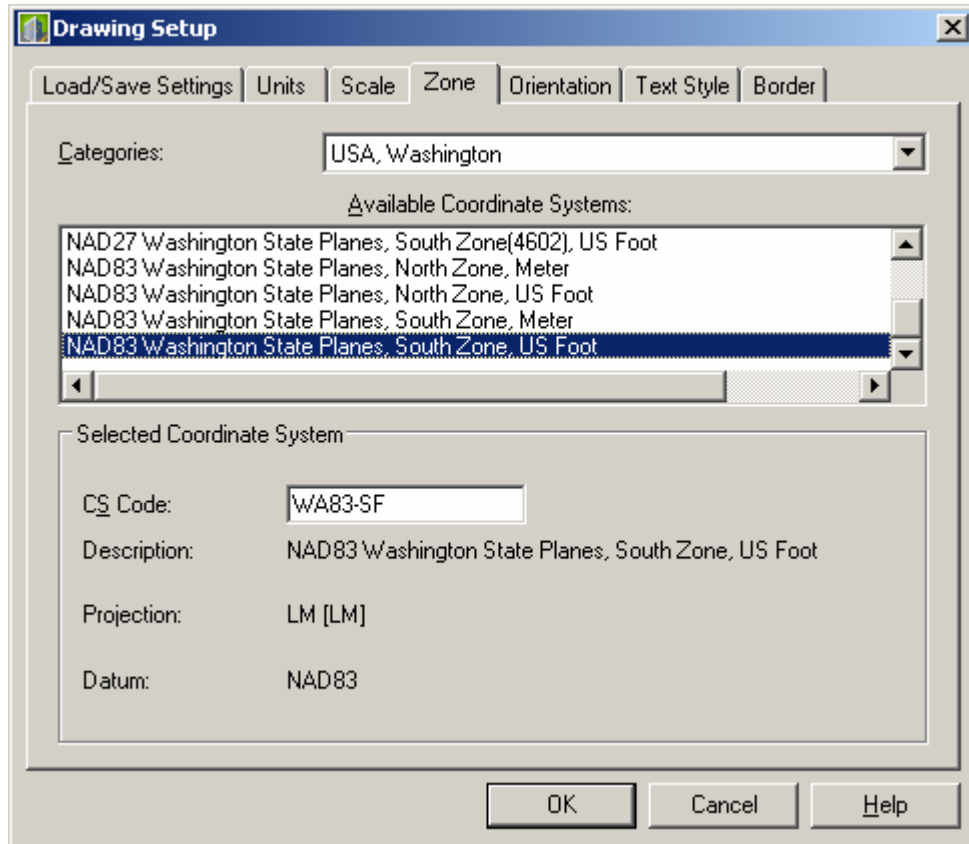
ftp://ftp.ci.vancouver.wa.us/Trans/TRANSPORTATION_BLOCKS/

Borders

All plan sheets must utilize a title block as a border. This border can be the developers engineer’s border or the City of Vancouver’s border. Either type of border will contain the Clark County Utilities decal - “Call before you dig.” All Traffic Signal plans must use City of Vancouver border and follow the Capital Drafting Standards Manual, contact Roger Waters for the latest layouts for Traffic Signal plans prior to starting your design.

IV. SURVEY

The City of Vancouver vertical datum is based on NGVD 29. The horizontal datum is based on 1983(91) State Plane Coordinates.



(Sample zone information from Autodesk Land Desktop 2007)

Model Space or User Coordinate Systems will both maintain coordinate integrity.

Drawings are drawn with all topography included.

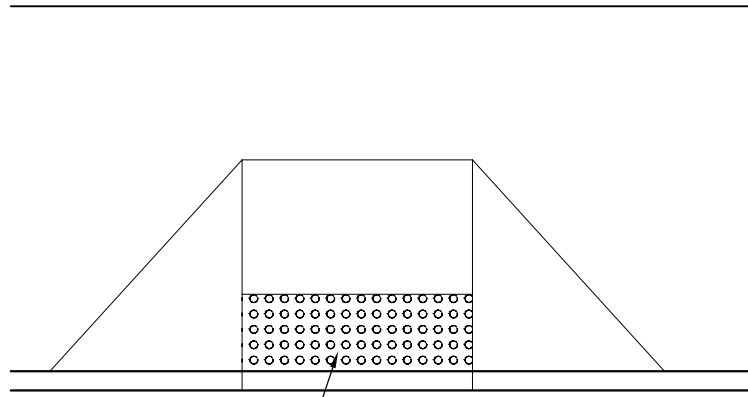
The line work and points that create the surface should be actual 3D entities at their true elevation, not 3D by association to a database. The surface, (TIN & Contours) should also be made of actual 3D objects. All points not fitting the topography representation shall be removed from the TIN formation.

An electronic ASCII point file should also be provided – Points, Northing, Easting, Elevation, Description (PNEZD) format and comma delimited.

If a survey bid is submitted, it should include, but not be limited to, research, monumentation search, control traverse (horizontal and vertical), monument ties, topography, construction support, re-monumentation, drafting and filing a ROS with the County, and any supplies and materials needed to complete this work. All survey work should comply with the requirements and standards outlined in RCW Title 58 and Clark County Land Division Ordinance Title 17.

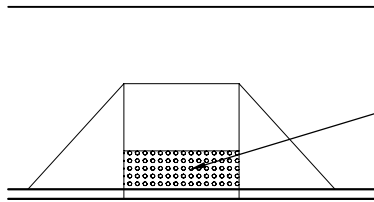
DRS Standard Symbols and Linetypes

DRS Standard Linetypes and Symbols



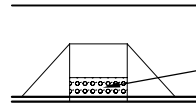
AT 1"=5' USE THIS LAYOUT
HATCH PATTERN: CIRCLES
HATCH SCALE: 0.5

SCALE: 1"=5'



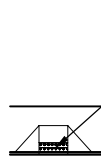
AT 1"=10' USE THIS LAYOUT
HATCH PATTERN: CIRCLES
HATCH SCALE: 0.5

SCALE: 1"=10'



AT 1"=20' USE THIS LAYOUT
HATCH PATTERN: CIRCLES
HATCH SCALE: 1.0

SCALE: 1"=20'



AT 1"=40' USE THIS LAYOUT
HATCH PATTERN: CIRCLES
HATCH SCALE: 1.0

SCALE: 1"=40'

DRS RAMP HATCH SAMPLES

Preferred Scale

The following scales are recommended:

Type of Project	Scale
Site Plan	Varies
Street Construction Plans	1"=40' (min. horizontal)
Profiles	1"=5' (vertical)
Erosion Control/Grading Plan	Varies
Signing and Striping Design/Street Lighting Design	Varies
Traffic Signal Design	
ADA Ramp Information	1"=10'
Underground Plan	1"=30'
Detector Loop Plan	1"=20'
Above Ground Plan	1"=10'

Text Styles, Sizes, and Fonts

Text Styles and Sizes Table

Font	Height (in.)(min.)	Color	Use
Romans.shx/ Bold.shx	.18	1	Street Names, Detail Titles
Romans.shx	.14	1	Proposed Stationing
Romans.shx	.14	2	Titles (i.e. "Notes"), Detail Sub-Titles
Romans.shx	.125	3	Proposed notes, messages or text
Romans.shx	.10	8	Existing Stationing
Romans.shx	.08	8	Existing notes, messages or text.
Romans.shx	.14	2	Main Title of Details

To maintain text legibility, only uppercase shall be used with a minimum text height of 0.08" for existing elements. All other notations shall be at a minimum text height of 0.10", preferable at 0.125". The maximum text height shall be 0.18". If you don't have the fonts we require, please contact us or go to either our web site or ftp site for the files you need.

V. PLAN PREPARATION

Drawing Order

All drawings should be assigned to one of the following categories.

Order	Category
1	General Cover Sheet General Notes Legend and Abbreviations Typical Street Sections Existing Conditions
2	<i>Erosion Control/Grading Plans</i>
3	<i>Utilities</i>
4	Street Plans
5	Signing/Striping and Street Lighting Plans and Details
6	Traffic Signals and Details
7	Traffic Control Plans
8	<i>Landscaping</i>
9	<i>Other Department Details</i>

- Depending on the size of the project, the Street Plans can also include Utilities, Erosion Control, Signing/Striping and Street Lighting information.
- Erosion Control, Utilities and Landscaping blocks and linetypes are included in this manual, but you do not have to use them.
- Grading Plans are usually done separately from Civil Plans and would have a cover sheet, the grading plan and details in its submittal.

On submitting plans, please do not sign plans until final submittal of mylars.

Cover Sheet

The cover sheet requires the following information:

- ◆ Professional Engineer's stamp
- ◆ Project Name
- ◆ Township and Range
- ◆ Engineer's Name, address, phone number and email
- ◆ Developer's Name, address, phone number and email
- ◆ Vicinity Map
- ◆ Sheet index:
 - Number
 - Title
- ◆ Benchmark, Datum elevation
- ◆ Transportation General Notes (General Notes information may go on a separate sheet if there are too many from the different departments) with current effective date for Standard Plans
- ◆ Current City of Vancouver Approval Block with Transportation and Traffic signature

For Cover sheet example see page 12.

DRS Example Cover Sheet

Legend and Abbreviations

The standard drawing file is called “DRS_LEGNOTES.DWT (or .DWG)”, see page 14 for an example. You can utilize the information in the COV border or remove the COV border and insert information in your own border.

Typical Street Section:

- ◆ Professional Engineer’s Stamp
- ◆ Street name(s) and stationing for section
- ◆ Per City Standard Plans:
 - Street Classification and standard plan number
 - Soil Classification (show arrow pointing at soil type that applies to project)
 - Design and posted speed
- ◆ Required Detail Information (non-standard cross-sections):
 - ROW and Street Centerline
 - Width of Right of Way (half or full)
 - Dimensions of street, planter strip and sidewalk
 - Indicate type and standard plan
 - Curb type
 - Sidewalks
 - Planter
 - Other improvements
 - ASSHTO Soil Classification
 - Coordinate with Pavement Manager for non-standard structural sections
 - Type Surfacing (AC, Concrete, Etc.)
 - Compacted Depth of Surfacing
 - Sub grade (standard proctor testing)
 - Pavement
 - 2% cross slope crown sections
- ◆ Public Utilities Easement (P.U.E.-6’ adjustment to ROW) for subdivisions only
- ◆ Sawcuts, grindoffs or overlays (if appropriate)

For Typical Street Section example see page 15.

DRS Example Legend and Abbreviation Sheet

DRS Example Typical Cross Sections Sheet

Existing Conditions Plan

Include the items below on all “Existing Conditions” plans with dimensions, see page 17 for an example.

- ◆ Existing Buildings
- ◆ Existing Right of Way
- ◆ Existing Stationing (if different)
- ◆ Existing Trees/Shrubs
- ◆ Existing Utilities including overhead utilities
- ◆ City Limits
- ◆ Construction Centerline with stationing
- ◆ Curb or Edge of Pavement (both sides of the street)
- ◆ North Arrow and Scale
- ◆ Project Title
- ◆ Property Lines/Easements
- ◆ Sidewalks
- ◆ Street Name(s)
- ◆ Fences
- ◆ Signing and striping
- ◆ Traffic Signal information
- ◆ Driveways
- ◆ ADA Ramps

DRS Example Existing Conditions Plan

General Information for Grading and Erosion Control Plan reviews

The following information is required on all Grading and Erosion Control Plans:

- ◆ Professional Engineer's Stamp
- ◆ North Arrow and Scale
- ◆ Street Name(s)
- ◆ Cut Areas/Fill Areas (hatched differently)
 - Quantities
- ◆ Contours
 - Existing
 - Proposed
- ◆ Existing utilities (protecting)
- ◆ Construction entrance location(s)
 - Sight distance triangles
 - Vision clearance triangles
- ◆ Haul route
- ◆ Proposed and Existing
 - Curbs
 - Edge of pavement
 - Sidewalks
- ◆ Transportation Grading Notes on plan view
- ◆ If grading plan is submitted separate from the civil portion of the project, a current approval block must be included with the plans.

See page 19 for an example plan.

DRS Example Grading Plan

General Information for Street Plan reviews

The following drawings are needed for Street Plan review:

- ◆ *Grading plans and erosion control plan*
- ◆ *Landscaping plan*
- ◆ Pavement design
- ◆ Reference Road modifications with approved EVR number
- ◆ *Sewer (plan and profile)*
- ◆ Sight distance triangle, calculations and vision clearance
- ◆ Signing/stripping and Street Lighting plan (if required)
- ◆ Traffic Signal plans (if required)
- ◆ Special provisions
- ◆ *Storm (plan and profile)*
- ◆ Street (plan and profile)
- ◆ *Water (plan and profile)*

Street Improvement Plans (Plan view)

- ◆ Professional Engineer's Stamp
- ◆ North Arrow and scale (min. 1"=40')
- ◆ Street Name(s) (existing and proposed)
- ◆ Relevant Topography:
 - Contours (existing and proposed)
- ◆ Utility Locations:
 - Existing/proposed/easements
- ◆ Drainage structures:
 - Existing/proposed/easements
- ◆ Right of Way Lines:
 - Existing and proposed with dimensions
 - Proposed right of way or easement vacations
- ◆ Access easements, tract and flag lots
 - Label and dimension (existing and proposed)
 - Full and half widths
- ◆ Street frontage improvements (full or half street improvements)
 - Sidewalks:
 - Connectivity – for future stubs need asphalt ramp to street
 - Show existing ADA Ramps with spot elevations indicated
 - Meandering sidewalks require stationing and offsets
 - Proposed ADA Ramps – check opposite ramp alignment
 - Opposed driveway alignments
 - Dimension existing and proposed
 - Dimensions:
 - Streets Existing and Proposed
 - Driveways
 - Cul-de-sacs
 - Temporary turn-around
 - Hammerheads
 - Street Alignment:
 - Centerline stationing – west to east or south to north
 -

Street Improvement Plans (Plan view) continued

- Station equations and reference points (northing and easting coordinates at intersections)
- Station – offset all improvements, provide beginning and end stations
- Tangent Bearings
- Centerline Curve Data table with delta, radius and curve length
- Curb Return Data table with station/offset, BC, EC and PCC, radius, curve length and elevations at ¼ points
- ◆ Sidewalk ADA Ramps
 - Show locations, call out standard plan number
 - Show opposite ramps for alignments
 - Existing ramps proposed to be retained – identify, provide spot elevations, indicate detectable warning type, lip height
 - Show temporary HMA ramps to street
- ◆ Show proposed Sawcut lines
- ◆ Street restoration at new curbs
- ◆ Trench restoration for utilities
- ◆ Turning Lanes and tapers
 - Beginning, end stationing
 - Taper rate
 - Median/auxiliary lanes
 - Dimensions and detailed
- ◆ Show driveway locations on all corner lots (also required to be shown on Preliminary Plat)
- ◆ Street Light locations only (callouts and other information shall be on signing/stripping and lighting plan)
 - Show locations only on utility and landscaping plans to prevent conflicts
- ◆ Traffic signals (if required, see Traffic Signal Plans information on page 31 for direction)
- ◆ Show, label and dimension sight distance triangle easements on all corner lots (verify Sight Stopping Distance) as indicated on our Intersection Sight Distance Requirements detail
 - Show also on landscaping and site plans
- ◆ Mail boxes
 - Type
 - Size
 - Location
- ◆ Retaining walls
 - Dimensioned detail
 - Structural calculations
 - Walls and footings shall be on private property

Street Improvement Plans (Profile view)

- ◆ Professional Engineer's Stamp
- ◆ Scale
- ◆ Existing Ground Lines
- ◆ Proposed Grade Lines at top of curb
- ◆ Provide design speed and posted speed
- ◆ Vertical Curves
 - 0-1% can utilize grade breaks
 - When intersecting grade exceeds 1% a vertical curve shall be used in accordance with the following:
 - Principal or Minor Arterials min. $k=43$ (sag), $k=64$ (crest)
 - Collector Arterials min. $k=29$ (sag), $k=37$ (crest)
 - Neighborhood Circulator or Local Access min. $k=11$ (sag), $k=26$ (crest)
 - Private Street $k=16$ (sag), $k=6$ (crest)
- ◆ Superelevation (if applicable)
- ◆ Extend Profile to show down stream conditions for Existing/Future streets
- ◆ Include Storm Sewer, Sanitary Sewer and Water lines

See pages 23 through 26 for example plans. Plan and profile information should be aligned with each other and go the same direction.

DRS Example Site Plan 1

DRS Example Site Plan 2

DRS Example Roundabout

DRS Example Civil Plan and Profile

Signing/Striping and Street Lighting Plans:

The following information should be shown on the “Signing/Striping and Street Lighting” plans. Drawing scale varies on size of project, use between 1”=20’ and 1”=60’. Depending on the size of project, signing/striping and street lighting information can be shown on the “Street” plan as long as the plan is in a clear and concise manner.

The following information is required on all Signing/Striping and Street Lighting Plans:

- ◆ Professional Engineer’s Stamp
- ◆ North Arrow and Scale
- ◆ Street Name(s)
- ◆ Show, label and dimension sight distance triangle easements on all corner lots (verify Sight Stopping Distance) as indicated on our Intersection Sight Distance Requirements detail
- ◆ Street Name Signs (see Ground Mounted Street Name Detail (T29-01)):
 - Public
 - Private
- ◆ See Signing and Striping General Notes (T29-20) for additional design information
- ◆ Signage:
 - Existing/Proposed
 - Regulatory
 - Warning
 - School
- ◆ No Parking Signs/Fire Lanes
- ◆ Striping:
 - Existing (where existing striping will be removed or paved over, don’t show on plans)/Proposed:
 - Stop Bars
 - Turn Lanes
 - Yellow Lane Lines
 - White Lane Lines
 - Lane Lines
 - Striping Legends
- ◆ Standard details and Callouts:
 - Striping Callout Numbers to match what is on the details
- ◆ Street Lighting
 - Existing
 - Type
 - location
 - Proposed
 - Type
 - Wattage
 - Station/Offset
 - Height
 - Average Luminance, Average to Minimum Luminance, Maximum to Minimum Luminance (See T21-01A and T2101B for design information)

Signing/Striping and Street Lighting Plans (cont.):

- ◆ Existing/Proposed Features
 - Sidewalks
 - Curbs/Medians
 - ADA Ramps
 - Striping
 - Cabinets
 - Junction Boxes
 - Center Line, bearings and Stationing (if needed)

See page 29 for an example Signing/Striping and Lighting plan.

Signing/Striping and Street Lighting Standard Plans

Include any of the “T29” series standard plans for all signing and striping projects that are applicable with your plan submittal.

Include any of the “T21” series standard plans for all lighting projects that are applicable with your plan submittal.

Signing Legend

Include any sign legends that are part of your project either on the plan sheet or on a separate sheet (see sample Signing Legend sheet on page 30. If you don't have a particular sign legend, contact Roger Waters (360) 487-7712 or email roger.waters@ci.vancouver.wa.us and he can get the CAD file(s) to you (we will not provide our entire library though).

DRS Example Signing/Striping and Street Lighting Plan

DRS Example Sign Legend Sheet

Traffic Signal Plans

Traffic Signal Plans for the City of Vancouver are to follow the same drafting standards no matter if the signal is part of a Capital Improvement project or a Private Development, so when designing a Traffic Signal for the City of Vancouver, please refer to Transportation Services Capital Improvement Drafting Standards for what is required. Prior to starting signal design, contact Roger Waters for the latest signal plan layouts.

Submit all Signal drawings in electronic format at the “mylar” stage and at the “as built” stage of plan submittals with a note that says “Designers will transfer the ownership of the design electronic drawings to the City of Vancouver to be used in future projects without any liability to the original Professional Engineer of record.”

Submit plans by mail to:

City of Vancouver
Transportation Services
Attn.: Roger Waters
PO Box 1995
Vancouver, WA 98668-1995

Submit plans in person to:

City of Vancouver
Transportation Services
Attn.: Roger Waters
4400 NE 77th Av., Suite 350
Vancouver, WA 98662-6829

Traffic Signal Standard Plans

Include any of the “T20” series standard plans for all traffic signal projects that are applicable with your plan submittal.

Interconnect Standard Plans

Include any of the “T22” series standard plans for all traffic signal interconnect projects that are applicable with your plan submittal.

Signalized Pedestrian Crossing Standard Plans

Include any of the “T23” series standard plans for all Signalized Pedestrian Crossing projects that are applicable with your plan submittal.

Landscaping and irrigation Plan reviews

The following information is required on all Landscaping Plans:

- ◆ Professional Engineer's Stamp
- ◆ North Arrow and Scale
- ◆ Street Name(s)
- ◆ Show, label and dimension sight distance triangle easements on all corner lots (verify Sight Stopping Distance) as indicated on our Intersection Sight Distance Requirements detail
- ◆ Medians
 - Detailed cross section
 - Irrigation plan
 - Planting schedule
 - Surface treatment

Landscaping and irrigation Standard Plans

Reference the "T03" series standard details for all landscaping and irrigation (within public right of way) projects, if applicable. Any landscaping or irrigation outside of the public right of way, use your own signed standard plans.