

*** DRAFT ***

Effective Date: 6/8/2009

Seattle Permits

— part of a multi-departmental City of Seattle series on getting a permit

Base Map and Survey Requirements for Street Improvement Plans (SIP)

Last Revised 5/8/09

The City of Seattle requires **complete** base maps and surveys as part of the application submittal for work within the right of way to be reviewed and permitted through the Street Improvement Permitting processes. All base maps and surveys are required to meet certain standards, identified in this Client Assistance Memo (CAM). Surveys and base maps showing boundaries, rights-of-way, easements, or topography must be prepared by a professional civil engineer or land surveyor registered in the State of Washington. Surveys and base maps are required to protect the City, private property, easements, rights-of-way, and to promote the public welfare of Seattle citizens.

Base maps provide detailed information needed to plan street improvements while avoiding conflicts with existing conditions both above and below ground. Base maps must show the existing topographic features and all underground utilities within the area of a project. A base map must also reflect the City's property lines as they relate to public right of way (ROW) and other pertinent legal lines.

Base Map Structure

Base maps contain four basic elements: Control, Right of Way, Topographical Features, and Underground Utilities.

1. Control

The control found on base maps usually refers to lines - often called centerlines, monument lines, and/or survey lines - all known as control lines. These lines are not topographic features; they are legally defined by survey control markers such as monuments, brass plugs, tacks, and other types of markers. Control lines are connected from survey

marker to survey marker and can be found on almost every street and intersection within the public ROW. In fact, it is the placement of survey markers that defines the legal boundaries of the City's property lines. City property defined by these boundaries is better known as the "Public ROW."

2. Right of Way (ROW)

The primary purpose of the public ROW is to allow for the movement of people, goods, and services. Public ROW is property within which the City of Seattle owns and maintains public utilities. Public ROW contains roadways, walkways, and various public utilities and is generally adjacent to private property. A base map must contain ROW lines depicting boundaries of the portion of land the City regulates. Like control lines, ROW lines are not topographical features; they are legally defined and recorded at a specified offset distance from the control lines.

3. Topographical Features

Aboveground features in a base map known as topographical features are derived from survey data. Topographical features can include, but are not limited to, castings, pavement surfaces, fences, trees, landscaping, creeks, power poles, signal equipment, and drainage features.

4. Underground Utilities

Underground utilities must be shown on base maps and can include, but are not limited to, sewers, storm drains, signals, lighting, electrical, phone, gas, water, cable, and steam.

Base Map Standards

1. Standard Abbreviations, Shading, and Symbols

Features on the base map and survey shall be shown and noted in accordance with standard abbreviations, shading and symbols found in the Standard Plans for Municipal Construction Standard Plans No 002 and 003 available at

www.seattle.gov/transportation



City of Seattle
Seattle Department of Transportation
Gregory J. Nickels, Mayor Grace Crunican, Director

700 5th Avenue, Suite 2300
P.O. Box 34996
Seattle, WA 98124-4996
(206) 684-ROAD (7623)

***** DRAFT *** Effective Date: 6/8/2009**

[www.seattle.gov/util/Engineering/Standard Plans & Specs/index.asp](http://www.seattle.gov/util/Engineering/Standard_Plans_&Specs/index.asp).

2. Washington State Licensed Engineer or Land Surveyor's stamp

All base maps and surveys require a Washington State Licensed Engineer or Land Surveyor's stamp, signature with date, and contact information.

3. Readability

All information provided on base maps and surveys must be readable.

4. Boundaries of Base Map and Survey

The base map and survey information must be shown for the full width of the rights of way adjacent to the project site, and for at least 50 feet beyond all of the boundaries of the project site or 50 feet beyond the limits of construction in the right of way when it extends beyond property boundaries to show possible impacts on neighboring properties.

If the rights of way adjacent to the project site are unimproved the base map and survey boundaries may need to be extended to include the entire block.

5. North Arrow

Compass Orientation: the north arrow shall be oriented with plan north to the left or top of the sheet.

6. Graphical Scale

All plans must use an engineer scale of 1" = 10' for horizontal plans and 1" = 10' or 1" = 5' for vertical profiles.

7. Lettering

All lettering must be a minimum of 1/8 inch and be legible.

8. Street Names

Include the street name for all frontages on all plan sheets.

SURVEY REQUIREMENTS

1. Vertical Datum

The Vertical datum for all survey work for Street Improvement Permitting (SIP) plans shall be the North American Vertical Datum of 1988 (NAVD 1988). The benchmarks used to establish ties to the datum must be shown in the surveyor's notes. At least two benchmarks are required.

2. Horizontal Datum

All Street Improvement Permitting (SIP) plans shall be in the Washington State Lambert Grid Coordinate System using the NAD83(1991) datum as established in accordance with chapter 58.20 of the Revised Code of Washington. All elevation information shall be in U.S. Survey Foot Units. The horizontal control to establish ties to the datum must be shown on the plans and/or be included in the surveyor's notes.

3. Monuments

At least two monuments shall be shown for each street frontage in plan view. The plans must show and describe all monuments, geometry and references used to establish the right of way, lines referencing the right of way, property lines, easements and any rights in real property shown. The plans must show bearing and distance on property lines and monument lines, or radius, delta angle, and curve length on curving monument lines, and the station at each monument. If construction baselines other than the monument line are used, show the relation of each baseline to the monument line. Survey control and boundary information may be shown on the design drawings or on its own sheet.

Coordinates (northing, easting) and descriptions for all monuments shown including bearing and distance between monuments for each street frontage are required. Stations are required at each intersection and for all monuments used.

Dimensions from monument lines to right of way lines are required. Rights of way with dimensions, source references and methods used to determine must be documented. Show the width of the rights of way on each side of the monument line and provide references used to determine the right of way. If the right of way is of variable width, show the width at each end of the block and project site boundaries.

4. Contours

Show existing contours at 1-foot intervals for portions of the site with less than 5% slope, at 2-foot intervals for portions of the site with slopes greater than 5% and less than 40%, and for those areas exceeding 40% that will be graded. Show 5-foot intervals for portions of the site with slopes that exceed 40% but will not be disturbed.

5. Water Features

Show lakes, rivers, streams, ditches, ponds and other surface water features. Show the line of ordinary high water and the top of any well-defined

***** DRAFT *** Effective Date: 6/8/2009**

banks. Show the 100-year floodplain, as shown on FEMA maps. Show protected areas: top of bank of Type A, B, and C streams, centerline of Type D streams, and wetlands.

6. Building Outlines

Show building outlines for buildings that are located within 10 feet of the right of way. Provide spot elevations at all vehicle and pedestrian access points.

7. Existing Improvements

All existing underground and surface improvements must be shown on the base map and survey. Show all existing street improvement elements including but not limited to, edge of pavements, concrete surfaces, asphalt surfaces, gravel surfaces, channelization, curbs, curb cuts, wheelchair ramps, gutter and flow lines, sidewalks, landscape areas, pedestrian and bike paths, structures, rockeries, retaining walls, fences, bridges, swales, culverts utilities, vaults and covers. Show the location, length, and height above finished grade for all fences, rockeries, retaining walls, etc.; note heights at end and mid points.

8. Street Trees

Show all existing trees within the right of way. Show all trees 6" in diameter and greater on private property with drip line abutting or overhanging the right of way. Identify all existing trees include species, diameter at 4 ½ feet above grade, and drip line. Show the tree diameter to scale.

9. Existing Underground Utilities

All existing utilities must be shown on the base map. **Field locate and show** all visible utilities, structures and appurtenances. Show all buried utilities.

Provide the **source and the information used for identifying all buried utilities**. Note the specific source information (e.g. side sewer card, franchise and utility map, vault plan, etc), and plan number for all underground utilities not field located. All utilities that are field located should be marked as such.

The method of location should also be noted (e.g. underground locator, potholing etc). Show the location, size and description of all utilities including water, power, sewer, and storm drainage systems and appurtenances. Show elevations at rim and inverts of manholes, catch basins, and inlets. Locate and dimension all fire hydrants, vaults, utility poles, etc.

Show all signal equipment including above and below grade items. Include conduits, pedestrian signals, vehicular signals, push buttons, hand holes, vaults, etc.

Identify and label all overhead and underground conduits, cables, and wires.

Identify and label all Metro Trolley poles and associated lines.

Accuracy

Base map drawings shall have accuracy to within the following limits: control line and R/W line distance shall at no point have an error in excess of 0.01 feet. All surface features shall be located to within 0.2 feet. Underground features shall be located within +/- 0.5' using as-built plan location and visual indicators.

Sources for Base Map and Survey Information

The following are some resources for documentation and other useful information.

The standard plan symbols can be found in the Standard Plans for Municipal Construction Standard Plans 003a – 003o.

- a. See Standard Plan 003a for electrical items such as signal controller cabinets, vaults, cables, conduits, ducts, and span wire.
- b. See Standard Plan 003b for electrical items such as light poles, strain poles, luminaries, anchors, and grounds.
- c. See Standard Plan 003c for electrical items such as traffic signals, mast arms, span wire, and detector loops.
- d. See Standard Plan 003d for electrical items such as signal pedestals, vehicle signals, pedestrian signals, pedestrian push buttons, junction boxes, and hand holes.
- e. See Standard Plan 003e for standard symbols for signalization, channelization, and signage.
- f. See Standard Plan 003f for paving items such as concrete, asphalt, curb, sidewalks, driveways, and bike paths.
- g. See Standard Plan 003g for sewer and drainage structures such as manholes, inlets, catch basins, and sand boxes.
- h. See Standard Plan 003h for sewer and drainage lines such as culverts, combined pipes, sewer pipes, storm pipes, service drains, inlet and catch basin connections, ditches, and streams.

***** DRAFT *** Effective Date: 6/8/2009**

- i. See Standard Plan 003i for topographic items such as bench marks, caps, hubs, monuments, tacks, and survey points.
- j. See Standard Plan 003j for topographic items such as centerlines, monument lines, survey lines, right of way lines, easement lines, building lines, fences, guardrails, rock facings, rip rap, and trees.
- k. See Standard Plan 003k for topographic items such as bushes, grade lines, slope lines, contours, vertical curves, depressions, dimension lines, and match lines.
- l. See Standard Plan 003l for topographic items such as monitoring wells, street name signs, mail boxes, posts, parking meters, castings, jersey barriers, tree pits, and north arrow.
- m. See Standard Plan 003m for private utilities such as telephone, television, steam, and gas.
- n. See Standard Plan 003n for water items such as water mains, blocking, bends, crosses, tees, pipe sleeves, hydrants, water meters, and valves.
- o. See Standard Plan 003o for water items such as valves, blowoffs, and water chambers.

CADD files of all the standard symbols can be found at

http://www.seattle.gov/util/Engineering/CAD_Resources/GeneralCADDsupport/COS_001776.asp

Seattle Public Utilities (SPU) Engineering

Engineering, design and survey resources for developers, contractors, engineers and consultants

<http://www.seattle.gov/util/Engineering/index.asp>

Department of Planning and Development (DPD)

Client Assistance Memos (CAMs)

[http://www.seattle.gov/dpd/Publications/Client_Assistance_Memos_\(CAMs\)/default.asp](http://www.seattle.gov/dpd/Publications/Client_Assistance_Memos_(CAMs)/default.asp)

Side Sewer Cards and Maps

<http://web1.seattle.gov/dpd/sidesewercardsv2/>

DPD GIS

<http://web1.seattle.gov/dpd/dpdgisv2/mapviewer.aspx>

The DPD Permit Counter located on the 20TH Floor of the Seattle Municipal Tower has information available on Sanitary Side Sewers and Service Drain lines.

Washington Council of County Surveyors

The Washington Council of County Surveyors contains survey control data posted on a map server. Other tools, links, and useful information can also be found on their website.

<http://www.wa-ccs.org/>

Washington State Reference Network

The GPS Network is a cooperative network delivering survey data and real-time GPS corrections for the Puget Sound region. For additional information visit the [Puget Reference Station Network](http://www.prsn.org/) website. <http://www.prsn.org/>

Seattle Public Utilities (SPU) Engineering Records Vault

Resources available in the Engineering Records Vault on the 47th floor of the Seattle Municipal Tower, 700 – 5th Avenue, include:

Maps

- Engineering quarter section maps, new (GIS computer-generated) and old (mylar).
- Aerial topography maps, new and old.
- Sewage and drainage topography maps.
- Base maps.
- Various City maps, including the 1:400 scale maps and the Vault Plan Index (VPI) original mylars.

Publications

- City of Seattle Standard Specifications, current and previous editions.
- City of Seattle Standard Plans, current and previous editions.
- Geotechnical soil boring, piling and slide reports on microfilm.
- Henry Fitch / Works Progress Administration (WPA) drainage and landslide reports and associated fieldbooks.
- Published City of Seattle ordinances.

***** DRAFT *** Effective Date: 6/8/2009****Indexes**

- Aerial photograph indexes.
- Base map indexes, geographic and card file.
- Capital Improvement Plan and Street Improvement Permitting (SIP) construction plans Inspector's (Resident Engineer) notes and reports notebooks.
- Geotechnical soil boring, piling and slide reports indexes on the VPI miscellaneous pages.
- King County plat books and condominium plat indexes, computer print out (showing the unrecorded plats) and card file.
- Offsite records storage notebook.
- Pre-1968 Capital Improvement Plan Construction plan card file.
- SDOT Roadway Structures listing for bridges, retaining walls and stairways.
- Survey field book index card files.
- Vault Plan Index (VPI), electronic and manual (Plan Register book and the ledger books).
- Water books, including two computer printout indexes listing projects outside the City of Seattle limits or projects not found in the VPI.

Plans

- Capital Improvement Plan construction plans.
- Street Improvement Permitting (SIP) construction plans.
- METRO, King County, or State of Washington plans that impact City of Seattle public rights of way.
- Inspector's (Resident Engineer) books.
- Plans for projects outside City of Seattle limits.

Survey Information

- Fieldbooks.
- Full section and 1/16th maps.
- Quarter section calculation sheets.
- Right of way files.
- King County plat books.
- Various shoreland and tideland maps.

Seattle Public Utilities (SPU) Survey Office

Resources available in the Survey Office on the 47th floor of the Seattle Municipal Tower, 700 – 5th Avenue, include:

- Large Plat Maps
- Computation files by street name, area, structure, or plat
- Right of way files by Section
- Section files
- Large Scale Profiles (approx. 1950-1998) by street name
- Water Dept Field Book Index
- Pipeline ROW maps
- Records for: Cedar River Watershed, Tolt River Watershed, Lake Youngs, Eastside Supply Line, and Mercer Island Supply Line
- City Light Field Book Index
- City Light Calculation records by Sec, Twp, Rge
- Power Lines from Skagit to Seattle
- Franchise Utility Records such as telephone, cable TV, steam, natural gas, and other private utilities

For information on location and hours visit

http://www.seattle.gov/util/Engineering/Records_Vault/Hours_&_Location/COS_001833.asp

SPU Base Map Manual

SPU has a base map manual available to the public. Go to

http://www.seattle.gov/util/Engineering/Consulting_Resources/For_Drafting_Consultants/index.asp to view the Base Map Manual.

King County Metro

For standards on Metro Transit trolleys and passenger facilities go to

<http://your.kingcounty.gov/kcdot/transit/dcs/standards/>

Traffic Signal Records

Signal operations records are located on the 37th floor of the Seattle Municipal Tower. Call 206-684-5118 to make an appointment for research access to the records. A one business day notice is appreciated but it is not mandatory. Bring your own paper for copies you may need. Paper sizes are 8 1/2" x 11", 8 1/2" x 14" and 11"x17" for the available copier.