

# 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 6/2/09

The City of Seattle requires a **complete** base map and survey as part of the application submittal for work within the right of way to be reviewed and permitted through the Street Improvement Permitting processes. A separate base map and survey is required to be submitted along with Street Improvement Plans. The base map and survey can either be combined or submitted as two separate documents. All base maps and surveys are required to meet certain standards, identified in this Client Assistance Memo (CAM). Base maps and surveys must be prepared by a professional civil engineer or land surveyor registered in the State of Washington. Base maps and surveys are required to protect the City, private property, easements, rights-of-way, and are essential for planning, designing and constructing improvements in the right-of-way.

Base maps and surveys are made up of three components: Control, Topographic Survey, and Base Map. Depiction of these components must meet specific drafting requirements.

**Control** is required so that right-of-way limits, property lines and other legal lines are properly established for the purposes of constructing ROW improvements. A **topographic survey** shows all topographic elements that can be identified using visual group survey methods. A **base map** provided detailed information on the location, type and size of infrastructure elements both above ground and buried.

### Drafting Requirements:

#### 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/util/Engineering/Standard\\_Plans\\_&Specs/index.asp](http://www.seattle.gov/util/Engineering/Standard_Plans_&Specs/index.asp).

If there is no standard abbreviation, shading and/or symbol for specific elements on the base map or survey the abbreviation, shading and/or symbol used must be shown in a legend on the base map and survey. Symbols should be scaled to match existing conditions.

#### 2. Sheet Size

Sheet size must be 22" x 34".

#### 3. 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.

#### 4. Readability

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

#### 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 base maps must use an engineer scale of 1" = 10'.

The minimum scale allowed for surveys is 1" = 40'.

If combining the base map and survey on one document then a scale of 1" = 10' must be used.

#### 7. Bar Scale

All base map and survey documents must include a bar scale.

[www.seattle.gov/transportation](http://www.seattle.gov/transportation)



## 8. Lettering

All lettering for base maps must be a minimum of 0.12" and be legible.

All lettering for surveys shall be L80 (0.08").

## 9. Street Names

Street names for all frontages are required to be shown on all base maps and surveys.

### Control Requirements:

#### 1. Control

Control refers to lines - often called centerlines, monument lines, and/or survey. 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. Survey markers 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 known as the "Public Right of Way."

The primary purpose of the public right of way (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 infrastructure. Public ROW contains roadways, walkways, and various public infrastructure and is generally adjacent to private property. A base map and survey 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.

#### 2. Boundaries of the Topographic Survey and Base Map

The topographic survey information must be shown for the full width of the rights of way adjacent to the project site, for at least 10' beyond the rights of way onto the private parcel(s) being improved, and for at least 50 linear feet along the ROW beyond all of the boundaries of the project site and/or proposed work.

The entire intersection including all four corners up to the far point of tangency of each curb return or roadway edge must be included in the survey for projects located adjacent to an intersection.

If the rights of way adjacent to the project site are not improved with curb and sidewalk the survey boundaries may at the request of the SIP Project Manager need to be extended to include the entire block. If improvements will be made to an unopened or unimproved alley the survey boundaries must extend to the intersecting street(s).

The limits of the base map may be less than the limits of the topographic survey. Base map information must be shown in the area where ROW improvement construction will impact existing infrastructure elements.

#### 3. 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). At least two vertical benchmarks are required and the data sheets for the benchmarks are required to be submitted. The benchmarks used to establish ties to the datum must be shown in the surveyor's notes in the following format:

##### VERTICAL DATUM BENCHMARK

OWNER: \_\_\_\_\_  
IDENTIFIER: \_\_\_\_\_  
DESCRIPTION: \_\_\_\_\_  
LOCATION: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_

#### 4. 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. At least two horizontal benchmarks are required and the data sheets for the benchmarks are required to be submitted. 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 in the following format:

##### HORIZONTAL DATUM BENCHMARK

OWNER: \_\_\_\_\_  
IDENTIFIER: \_\_\_\_\_  
DESCRIPTION: \_\_\_\_\_  
LOCATION: \_\_\_\_\_  
NORTHING: \_\_\_\_\_  
EASTING: \_\_\_\_\_

#### 5. 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. If construction baselines other than the monument line are used, show the relation of each baseline to the monument line.

Coordinates (northing, easting) and descriptions for all monuments shown including bearing and distance between monuments for each street frontage are required. Dimensions from monument lines to right of way lines are required. A list of source references used to determine the right of way lines should be included with the base map and survey. If the right of way is of variable width, show the width at each end of the block and project site boundaries.

## Topographic Survey Requirements:

### 1. Topographical Features

Aboveground features known as topographical features are derived from topographic 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.

All existing underground and surface improvements that can be interpreted from a visual survey must be shown on the topographic survey. This includes but is not limited to ground surface contours, edges 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.

### 2. 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.

### 3. Street Trees

Show all existing trees within the right of way and all trees 6" or more in diameter on private property where the drip line abuts or overhangs the right of way. The trunk diameter at 4 ½ feet above grade and drip line shall be shown on the topographic to scale.

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

## 5. Building Outlines

Show building outlines for buildings located on parcel(s) being improved that are located within 10 feet of the right of way. Provide spot elevations at all vehicle and pedestrian access points.

## Base Map Requirements

### 1. Existing Underground Utilities

Detailed information on all existing utilities that will be impacted by construction must be shown on the base map. All visible infrastructure including utilities, structures and appurtenances are shown on the topographic survey. The type, size, horizontal location and elevation of buried utilities and above ground infrastructure and utilities must be included within the area that will be impacted by construction. In addition to providing detailed information on the base map a list of the sources of the information must be provided. The list shall include the specific source of information such as side sewer cards, franchise and utility maps, vault plans, etc, and plan number for all under and/or aboveground utility information. Utility information obtained from an underground locator, via potholing etc. should be noted as such.

### 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.
- 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](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 20<sup>TH</sup> 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/>

## Monument Reference Sites

<http://plso.wadnr.gov/wccsmap>

<http://www.wsdot.wa.gov/Monument/gis/viewer.htm>

## Seattle Public Utilities (SPU) Engineering Records Vault

Resources available in the Engineering Records Vault on the 47<sup>th</sup> floor of the Seattle Municipal Tower, 700 – 5<sup>th</sup> 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.

## 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 47<sup>th</sup> floor of the Seattle Municipal Tower, 700 – 5<sup>th</sup> 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](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](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 37<sup>TH</sup> 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.