

SPR SURVEY & MAPPING STANDARDS

Standard Instructions for Contract Survey

- I. **SCOPE:** This standard describes requirements pertaining to Land Surveying and Mapping needed to implement design and construction of stipulated improvements. The requirements include setting accurate horizontal control points, baselines and vertical elevation benchmarks, as well as Land Surveying needed to locate the physical features of the ground, utilities, and other topographic data as necessary under the contract requirements. The standard also describes format and deliverables related to the mapping of the surveyed data.

- II. **GENERAL:** The City of Seattle requires surveys to be submitted with all work performed for the City, and for plans submitted to the City as part of an application for permits for building, street use, or other permits. All surveys are required to meet certain basic standards. Plans that show boundaries, right-of-ways, easements, or topography must be prepared by a professional land surveyor registered in the State of Washington. All Land Surveying and Mapping work must be done in accordance with [Seattle Public Utilities \(SPU\) Survey Requirements](#), supplemented with SPR requirements as provided below.
 - A. All survey work shall meet the standards as set forth in [WAC 332-130](#).
 - B. The Contracted Surveyor shall be responsible for gathering all reference documents and field information needed to complete the contract as required.
 - C. **Nomenclature:** All references to “*Chief Surveyor*” or “*Survey Manager*” or similar contained in City of Seattle standards created by City Departments other than SPR shall be construed as the Chief Surveyor for SPR, who may be contacted at 206-684-4954, and whose office is located at the RDA Building, 800 Maynard Avenue South, Seattle, WA 98134. Additionally, all references to “*Seattle Public Utilities Survey Section*” or similar shall be construed as the office of the Chief Surveyor for SPR.
 - D. **Detailed Information Required:** The survey information and drawing(s) must include the following detailed information as applicable, and any additional information that may be required by the specific Project contract:
 1. Rim and invert elevations of inlets, catch basins and manholes in the Project vicinity.
 2. Spot elevations (supplementary to contouring) on specific positions; top of slope, toe of slope, base of trees, gutters, flowlines, top/bottom of wall, top/bottom of curb, top/bottom of stair, top/bottom of ramp, high points, low points, edge of pavement, corners of buildings and structures, beginning/turning/end points of features, valves, vaults, boxes, etc.
 3. Spot elevations for edge of pathway must be provided on both sides of path for determination of cross slope. Spacing can range from 10’ to 30’.

4. Contours at 1' minor and 5' major interval in maps covering larger than 100' square where surface drainage is a concern, or as stipulated. Contour lines must be three dimensional polylines.
5. Landscape ornamental trees smaller than 6" in diameter, all trees larger than 6" in diameter.
6. Irrigation and potable water lines (including size), valves, sanitary sewer and storm drain lines (including size), gas lines, underground electrical and communication conduit. When locations of underground utilities are not known from existing data, the Project Manager will determine if on-site excavation will be implemented by Park personnel. Unconfirmed utility locations must be so noted on the drawing.
7. Buildings, walks, and other improvements within the perimeter of the design area.
8. Pertinent legal information; park property lines, corners, ordinances, etc. (Check with Park survey and Park Property Management).
9. Drawing must include schedule/table of horizontal control points to be used by the designer to establish layout information on the construction documents.
10. Horizontal control, including ties to existing street monumentation, as established by survey must be shown and clearly marked on the drawing. A schedule/table of control points must be included.
11. Vertical control as established by survey must be noted, and Project benchmark must be identified. Where Project includes shorelands or tidelands, a vertical datum correlation table must be included for the datum regulating the body of water. (i.e. Lake Washington-Corps of Engineers Datum, Locks).
12. All details further contractually required within any particular Project.

III. **SURVEY STANDARDS:** Project surveys should be conducted by SPR's Survey Crew whenever possible. However, survey services may be contracted to a third party upon approval by the SPR Survey Chief. Contracted survey services shall be conducted in accordance with [City of Seattle Contract Surveying Standards](#), with the following supplemental requirements:

- A. **Accuracy Standards.** The maximum linear error of closure for all traverses shall be 1:10,000, with a maximum angular error in seconds of $10\sqrt{n}$, where n equals the number of angles in the closed traverse for conventional traverse. All terrestrial traverses shall be closed or start and end on two points with known coordinates. For GPS control networks, the Federal Geographic Data Committee STD-007.2-1998 guidelines shall be followed meeting 2-centimeter accuracy.

- B. **Review.** The City of Seattle Parks & Recreation Survey Section shall have ten working days to review all information submitted for conformance to this attachment before awarding payment of the contract.
- C. **City of Seattle Datum.** The NAVD-88 datum shall be tied to an old City of Seattle datum benchmark in the proximity of the Project. The difference between the two datum shall be listed in the notes and on the plans.
- D. **Project Control:** The horizontal control shall be noted in the field book with a drawing and associated angles and distances measured. All monuments, corners and other control points, found or set shall be described in the notes. Horizontal control shall be referenced to a minimum of two street monuments. Vertical control shall describe the benchmarks used to establish ties to the datum, with reference number, description, location and elevation of each benchmark used, and of any Project site benchmarks set. Project site benchmarks shall be established by measurement from two local benchmarks. Site benchmarks shall be set in a location that will not be disturbed by the proposed construction. A level loop, if needed, shall be recorded and all benchmarks set by the contractor shall be listed in the field book.
- E. **CAD Files.** The consultant shall provide an AutoCAD Civil 3D 2017 drawing file. The CAD drawing must be done full scale 1 to 1. A bond plot must be provided at the scale of 1"=20' for SPR Contract Documents and/or Record Drawings. A copy of the AutoCAD file and all additional files necessary for plotting (ie. ctb file) shall be submitted to the SPR Chief Surveyor along with a key to layer names.
1. **Title Block:** All SPR drawings must be produced using the [SPR standard title block](#). This file is a template drawing (.dwt) created in AutoCAD Civil 3D, version 2017 and contains standard layers, fonts, dimension styles, annotated text, line types, blocks, and other CAD drawing tools. The file includes six layout tabs including 36x24 Cover Sheet and Titleblock (vertical titles), 42x30 Cover Sheet and Titleblock (vertical titles), and 36x24 Cover Sheet and Titleblock (horizontal titles). The 36x24 sheets with vertical titles is the preferred sheet size type. There are non-print notes in the Paperspace of the file that give additional directions.
 2. **Digital Terrain Model (DTM):** The files submitted shall include an electronic copy of the DTM used to create the site contours.

END OF SECTION