SPR SURVEY & MAPPING STANDARDS

Standard Instructions for Contract Topography

I. SCOPE: This work shall consist of the Land Surveying and Mapping needed to implement design and construction of stipulated improvements. The work includes setting accurate horizontal control points, baselines and vertical elevation benchmarks. This work also includes the Land Surveying needed to locate the physical features of the ground, utilities, and other topographic data as necessary under the contract requirements. The work will be concluded with the mapping of the surveyed data.

II. SURVEY STANDARDS:

A. All work shall be done by or under the direction of a Surveyor, licensed to practice in the State of Washington.

B. **Horizontal Datum**: All survey work (including but not limited to, mapping, platting, planning, design, right-of-way surveys, and construction surveys) shall be in the Washington State Lambert Grid Coordinate System North Zone, using the NAD83 (1991) datum as established in accordance with chapter 58.20 Revised Code of Washington, as adopted by City of Seattle Ordinance #121291. The unit of measurement shall be the U.S. Survey Foot. The plans shall show the horizontal control used to establish ties to the datum, with type, size, & location, date visited, and the State Plane coordinates for each monument used.

C. **Vertical Datum**: The Vertical datum for all survey work (including but not limited to mapping, platting, planning design, right-of-way surveys, and construction surveys) shall be the North American Vertical Datum of 1988 (NAVD 1988), as adopted by City of Seattle Ordinance #121291. The plans shall show the benchmarks used to establish ties to the datum, with reference number, description, location and elevation of each benchmark used, and any project site benchmarks. 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.

Information on horizontal and vertical control monuments can be found on the Worldwide Web at www.surveycontrol.state.wa.us, or in the Engineering Records Vault on the 47th floor of the Key Tower Building, at 700 Fifth Avenue, Seattle, WA. Seattle Public Utilities maintains a Continuously Operating Reference GPS network which can be utilized to establish NAD83(1991). Contact the Seattle Public Utilities Survey Section at 206-684-5073 to obtain data from the network.

The City of Seattle Datum: When reference is made to records or plans created using the City of Seattle datum, a local conversion factor between the two datum shall be established

by leveling between benchmarks in each of the respective datum, and shown on the plans. The City of Seattle Datum benchmark used to establish the conversion factor must be on or near the project site. Information on the City of Seattle Datum can be obtained by consulting City of Seattle Survey field books, which are available in the Engineering Records Vault on the 47th Floor of the Seattle Municipal Tower Building, at 700 Fifth Avenue, Seattle, WA. The plans shall show the description, elevation, and book/page reference for the City of Seattle Datum benchmark used to establish the conversion factor. Information on the City of Seattle Datum can also be obtained by consulting City of Seattle Parks & Recreation Survey field books, which are available at the Parks Survey Office at Room 210, 800 Maynard Ave S, Seattle, WA. Phone 206-684-4954.

D. All survey work shall meet the standards as set forth in WAC 332-130.

E. The Contracted Surveyor shall be responsible for gathering all reference documents and field information needed to complete the contract as required.

F. Monuments Disturbed, Destroyed, Removed or Replaced. The Consultant shall be responsible for referencing and replacing all monuments that may be disturbed, destroyed or removed by the project, and shall file an application for permit to remove or destroy a survey monument with the Washington State Department of Natural Resources, pursuant to RCW 58.24.040(8). Check with Park Survey for any survey monuments/property corners set within project limits.

III. SURVEY REQUIREMENTS:

A. **Field Notes:** A copy of all survey field notes pertaining to the survey control as recovered or as established for the survey shall be turned over to the Chief Surveyor of Seattle Parks Department.

B. **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.

C. **Data Collection:** An electronic copy of a coordinate file shall be provided to Park Survey consisting of all control points assigned and topographic shots taken for the preparation of the design map, listed in the comma delimited ascii format- point number, easting (X), northing (Y), elevation (Z), descriptor

IV. MAPPING CRITERIA AND STANDARDS:

A. Basic CAD mapping standards shall follow the City of Seattle standard for symbols and line types available from the CAD standards per SPU webpage via the Web site www.seattle.gov/util/Engineering/CAD_Resources/ and together with title/border formats, which can be obtained from SPR Surveyors.

B. An AutoCAD (V2007 or newer version) drawing file or a DXF file of the completed job shall be created by the Contractor. The CAD drawing will be done full scale 1 to 1. A bond plot will be supplied at the scale of 1”=20’ for Park files. A copy of the AutoCAD file and all additional files necessary for plotting (ie. ctb file) shall be submitted to Seattle Parks Surveyors along with a key to layer names. The drawing should contain the following detailed information or any combination of information as contractually required:

1. Rim and invert elevations of inlets, catch basins and manholes in the project vicinity.
2. Spot elevations, as supplementary to contouring, on specific positions; top of slope, toe of slope, base of trees, gutters, flowlines, etc.
3. 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 shall be three dimensional polylines.
4. Landscape ornamental trees smaller than 6” in diameter, all trees larger than 6” in diameter.
5. Irrigation and potable water lines (&size), valves, sanitary sewer and storm drain lines (&size), gas lines, underground electrical and communication conduit. When the location 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 location will be noted.
6. Buildings, walks, and other improvements within the perimeter of the design area.
7. Pertinent legal information; park property lines, corners, ordinances, etc. (Check with Park survey and Park Property Management).
8. Drawing will include schedule/table of horizontal control points to be used by the designer to establish layout information on the construction documents.
9. Horizontal control, including ties to existing street monumentation, as established by survey will be shown and clearly marked on the drawing. A schedule/table of control points shall be included.
10. Vertical control as established by survey will be noted, and project benchmark will be identified. Where project includes shorelands or tidelands, a vertical datum correlation table shall be included for the datum regulating the body of water. (i.e. Lake Washington-Corps of Engineers Datum, Locks).
11. All details further contractually required within any particular project.

END OF SECTION