

REFERENCE

REFERENCE J 195
DECEMBER 1986

CITY OF LOS ANGELES, BUREAU OF ENGINEERING'S SPECIFICATIONS
FOR CONTRACTUAL SURVEY SERVICES

I. GENERAL

The Contractor shall perform survey services in accordance with the plans, specifications, change orders and Bureau of Engineering Manual, Part J, as interpreted by the City Engineer. This shall include but not be limited to survey services necessary for the construction and inspection of the contracted project. The Contractor shall not remove or construct any improvements without appropriate survey service.

A. Definitions

Contract Surveyor - A Land Surveyor or qualified Civil Engineer registered by the State of California in compliance with the Business and Professions Code Section 8700, et. seq., cited as the Land Surveyor's Act.

Construction Stakes - Any durable marker that will maintain elevation, station and offset for the duration of its use as a reference marker for construction

Surveying - As described in Section 8726 of the Land Surveyor's Act.

Survey Manual - City of Los Angeles Bureau of Engineering Manual, Part J - Survey.

B. Compliance with State Law and the Standard Specifications of Public Works Construction.

The Contractor shall employ a "Contract Surveyor". The Contract Surveyor shall be responsible for establishing the basic control net for the project area to the satisfaction of the City Engineer prior to beginning any major portion of grading for construction. The City Engineer shall be notified, in writing, of all material discrepancies. Material discrepancies shall be resolved prior to the start of construction. During the progress of construction, the Contractor shall provide surveying services as necessary, or upon request of the City Engineer, to assure that the construction complies with the plans and specifications. The Contract Surveyor

shall fulfill the duties of the "Engineer" as described in the Standard Specifications for Public Works under Section 2.9, Surveying. The Contract Surveyor shall attend the preconstruction meeting.

C. Safety

The Contract Surveyor shall conform to the recommended standards to be observed by all those who perform work in a public street to provide safe and effective work areas and to warn, control, protect, and expedite vehicular and pedestrian traffic, as set forth in the latest edition of the Work Area Traffic Control Handbook (WATCH), and applicable CAL/OSHA requirements.

D. Accuracy

The Contract Surveyor shall establish survey control using a standard of accuracy that will assure that the design criteria will be met. The Surveyor shall document, in the survey field notes, all errors of closure and notify the City Engineer, in writing, of all material discrepancies. See Survey Manual, Chapter J 600, Figure J 615.224A, Construction Accuracy.

E. Survey Field Notes, Title Page, Plat, Grade Sheets and Descriptive Notes.

The Contract Surveyor shall prepare survey field notes for all phases of survey services. All survey field notes shall be complete, retraceable and in the format set forth in the Survey Manual, Chapters J 300, J 400, J 600 and J 700. The Contract Surveyor shall submit all original survey field notes, after each phase of survey services, to the City Engineer for approval. The Contractor shall not remove or construct any improvement requiring survey control without approved survey field notes consisting of:

1. Title Page - Each phase or section of survey field notes shall have a title page in the prescribed format drawn on 8-1/2 inch x 11 inch Engineering Form 3.883 B;
2. Plat - All survey plat shall be drawn on 8-1/2 inch x 11 inch Engineering Form 3.883 B. All control plat shall list cross references to the appropriate City Engineer's Field Book;
3. Grade Sheets - All grade sheets or descriptive field notes shall be drawn on quality 8-1/2 inch x 11 inch paper. All joins, stations, offsets and grades shall be measured and

documented on the grade sheet. All differences between plan location and measured location shall be noted on the grade sheet. The City Engineer shall be notified in writing of all material differences and an explanatory note added to the title page of the grade sheet. The Contract Surveyor shall deliver the grade sheets to the Project Engineer in a timely manner, so they may be approved and issued to the Contractor prior to construction; and

4. Original - The contractor shall submit all original field notes to the City Engineer after each phase of survey work.

F. Verification

The City Engineer may review the contract survey work at any time. The Contractor shall furnish the City Engineer with the original field notes, computations, and other relevant work records upon the request of City Engineer.

II. HORIZONTAL CONTROL

Control Line Surveys shall conform to the Bureau of Engineering's Manual Part J, Chapter J. 300

A. Standards

The control line survey of any area will be the basis for many future surveys. Control line surveys shall meet or exceed the angular and linear tolerance specifications as shown in the Bureau of Engineering Manual, Part J, Figure 332A.

B. California Coordinates System

California Coordinate System, Zone 7, shall be used when required; per Section 8809 of the California Public Resources Code.

C. Control Preservation

The Contract Surveyor shall perpetuate all survey control that may be disturbed or lost and submit pre-construction ties for approval by the City Engineer before start of construction.

1. Horizontal Control - The Contract Surveyor shall establish preconstruction ties and record said ties in survey field notes in accordance with Sections J 370 and J 371.

2. Post Construction Tie-Out - All horizontal survey control points shall be replaced in their original position after the completion of construction (See Section 8771 of the Land Surveyors Act). Said points shall be tied-out and survey notes in conformance with the J 370 and J 372 shall be submitted to the Los Angeles City Survey Division for approval. Approved survey field notes are required for final payment.

III. ESTABLISHING VERTICAL CONTROL

A. General

There are subsidence areas within the City limits which shall be considered when establishing vertical control for surveys in these areas. The Surveyor shall use the proper vertical control datum. The Contract Surveyor shall run a vertical control circuit between known precise BMs if no level circuit exists. Two BMs should be left at each intersecting street along this level circuit. Preliminary Surveys which intersect or join a street surveyed on another datum plane shall indicate previous and present datum planes to ensure proper joins. The original BMs shall be used for additional preliminary surveys on streets which have been recently surveyed, and for additional work requested on other streets in the same district. Use Standards as specified in the Bureau of Engineering Manual, Part J, Figure J 450.

B. Bench Mark Datum Plane Reference

The bench mark reference shall be shown on all maps, plans, and field notes submitted to the City Engineer and shall include the precise level bench mark number and year of adjustment. On other bench circuits run between precise or nonprecise bench marks show field book, page, datum and year of adjustment of levels used (See J 452.3, BM DATUM PLANE REFERENCE).

C. Preservation

The Contract Surveyor shall establish bench marks outside the construction limits, replacing bench marks that are subject to being disturbed or lost, and record said benchmark elevations and survey field notes in accordance with J 452.

SURVEY DIVISION
POINTS COMPUTATION

January 23, 1984

Points Column

Points will be computed by using the following guidelines. The Survey Party Chief will keep a record of the daily man hours and points on the pink folder of each survey request. These are to be reported each evening on the Daily Assignment Report.

ONE POINT EQUALS

Construction

- Each stake set (spk., N&T, 1 x 2, gutter cut, fill or cut mark, etc.)
- Each control point set or occupied by instrument or sight, whether temporary or permanent.

Preliminary

- Each point having a station, offset, and/or an elevation.
- Each control point set or occupied by instrument or sight, whether temporary or permanent.
- Number of turns - Level circuits absorbed by job.

Level Circuits

- Number of turns.

Center Line Control

- Each point that is tie-out and shown on the control line plat. This would include C/L intersections, P.I.s, angle points, P.O.L.s, etc. The number of points for each project would generally equal the number of pages of C/L plat.
- Use above method when center line work is involved in preliminary or construction surveys and is absorbed by the specific job.

Triangulation and Traverse (Geodetic)

- Each station occupied by instrument, sight, signal, or reflector. District Survey offices doing Geodetic Surveys must use this method of computing points.



Survey Calculations (For Office Only)

- Same as for Center Line Control.
- Geodetic will use same as for Triangulation, but count only new stations computed.

Survey Coordination (For Office Only)

- Each survey project researched.
- Each completed project indexed and plotted.

Tract and Parcel Maps (For Office Only)

- Each map reviewed on first submittal.
- Each map reviewed on re-submittal.
- Each map field checked.

Sewer Gauging

- Each sewer manhole gauged.

NOTE: Points are required on ALL sub-activities except - 02, 03, 58, 62, 65, 66, 82, 85, 90/98.