

## **SECTION 01722 SURVEYING**

### **1.1 THE REQUIREMENT**

#### **A. Survey**

1. The CONTRACTOR shall provide all necessary survey services for the construction of all improvements on the Contract Drawings.
2. All survey work shall be performed and reported in metric units.
3. Work shall conform to the lines, elevations, and grades shown on the plans.
4. The CONTRACTOR shall take necessary measures to ensure the preservation of survey monuments and benchmarks.
5. The ENGINEER will be responsible for providing the initial vertical benchmarks and horizontal control points. The CONTRACTOR shall notify the ENGINEER in writing at least seven (7) working days before the initial survey control points are required.
6. The CONTRACTOR shall be responsible for all surveys required to layout the Work and for the accuracy of all survey work for construction. The CONTRACTOR shall include the cost of all such survey work in their Bid. The CONTRACTOR shall have all construction surveying performed by a `Licensed Land Surveyor' or a `Civil Engineer' registered by the State of California to perform such work. The ENGINEER reserves the right to verify all survey work done by the CONTRACTOR.
7. The CONTRACTOR shall preserve the initial survey control points for the duration of their usefulness. Monumentation that is subject to disturbance or destruction shall be located and referenced prior to construction and relocated and referenced after construction, in accordance with the Standard Specifications and the Standard Plans.

#### **B. Construction Surveys**

1. Construction surveys shall conform to the City of Los Angeles, Survey Division - Construction Staking Guidelines (See Appendix III of Technical Specifications).
2. The CONTRACTOR shall provide all reference stakes and form checks necessary for construction and inspection of improvements. All construction staking shall be documented in survey field notes. This staking may include but is not limited to: removals, joins, rough grade, slope, utilities, storm drains, sewers, curbs, walks, paving, wall and building stakes; and any other staking necessary for construction and inspection.

#### **C. Reference Or Grade Stakes**

1. A reference or grade stake shall be set for each grade change or angle point shown on the plan, standard plan, and shop drawing, in addition to the normal staking interval.
  2. Three consecutive points set on the same slope shall be used together so that any variation from a straight grade can be detected. Any such variation shall be reported to the ENGINEER in writing. The CONTRACTOR shall be responsible for any error in the grade of the finished work.
- D. Form Checks
1. Forms shall be checked when durable points may be disturbed, removed, or are impractical to be used to verify the design location. The measured location shall be recorded in the survey field notes. All variations from the plan location shall be brought to the attention of the ENGINEER and INSPECTOR prior to start of construction.
- E. Staking Intervals And Offset Stake Lines
1. All staking intervals shall be in accordance with the City of Los Angeles, Survey Division – Construction Staking Guidelines (See Appendix III of Technical Specifications). Stake lines shall be set at an offset distance from the improvement to ensure proper grade, station, and alignment.
- F. Utility Stakes
1. The CONTRACTOR shall provide stakes for all utilities, public or private, that require location or relocation, unless otherwise stated.
- G. Additional Survey Work
1. The CONTRACTOR may be required to furnish additional survey work, such as profiles, restakes, Change Orders, etc., at the request of the ENGINEER or the INSPECTOR.
  2. Direct costs of said surveying services shall be in strict accordance with the Cost Reimbursement (Time and Materials) portions of PAYMENTS FOR CHANGES AND EXTRA WORK of the GENERAL REQUIREMENTS. However, if these items are not executed or partially executed or the allowance for any item is not expended or partially expended, or over expended (with the ENGINEER'S prior approval), then an appropriate Change Order shall be executed in accordance with the provisions OF PAYMENT FOR CHANGES AND EXTRA WORK of the GENERAL REQUIREMENTS.
- H. Accuracy
1. The CONTRACTOR shall use appropriate surveying methods to obtain the accuracy standards specified in the City of Los Angeles, Survey Division – Construction Staking Guidelines (See Appendix III of Technical Specifications).
- I. Survey/Inspector

1. The CONTRACTOR shall provide to the INSPECTOR those measurements and control points necessary to determine the location and conformance to the plan, line, and grade of the improvements necessary for inspection purposes.
- J. Survey/Engineer
1. The CONTRACTOR shall provide to the ENGINEER within twenty-four (24) hours after request those measurements necessary for the expedient completion of the Project.
- K. Survey Notes
1. The CONTRACTOR shall supply and keep notes on CITY standard format note sheets. All computations, survey notes and other records necessary to accomplish the work shall be neat, legible and accurate.
  2. The CONTRACTOR shall supply, for review, a copy of survey notes to the ENGINEER and INSPECTOR forty-eight (48) hours prior to start of construction.
  3. Upon completion of the Project, the original survey notes shall become the property of the CITY and shall be delivered to the ENGINEER.
- L. Electronic File of Contract Drawings
1. A copy of the electronic file (AutoCad Civil Design format) of the Contract Civil Drawings, D-32096, will be made available, by request only, for Contractor review after award of contract.
- M. Pre-Construction Meeting
1. Fifteen (15) days prior to start of actual construction activities, CONTRACTOR's surveyor shall meet with the ENGINEER to discuss the planning and coordination of work for this project.
- N. Payment
1. Construction survey services will be paid for on the basis of the contract lump sum price bid for "CONSTRUCTION SURVEY", which shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in performing construction survey, as shown on the plans, as specified in these specifications, and as directed by the Engineer. Any delays occasioned by the verification of survey data and monument locations will be considered as included in the contract lump sum price paid for "CONSTRUCTION SURVEY", and no separate payment will be made therefore.

(END OF SECTION)