

SECTION 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements and procedures for field engineering services to establish elevations and slopes required to layout the proposed design.

1.2 RELATED SECTIONS

- A. Section 01 77 00 - Closeout Procedures: Project Record Documents.

1.3 QUALITY CONTROL

- A. The Contractor shall employ a civil engineer or land surveyor registered in the State of California and acceptable to the City Representative to perform site surveying under the Contract Documents.
- B. The Contractor shall submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.

1.4 SUBMITTALS

- A. Submit name, address, and telephone number and state registration number of the Surveyor before starting survey work.
- B. Submit a copy of site drawing, and a certificate that the elevations and locations of the Work are in conformance with Contract Documents, all prepared, stamped and signed by the surveyor.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain a complete and accurate log of control and survey work as it progresses.
- B. Submit Record Documents under provisions of Section 01 77 00 - Closeout Procedures.

1.6 EXAMINATION

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify the City Representative in writing of any discrepancies discovered.

1.7 SURVEY REFERENCE POINTS

- A. Control datum for survey is that established by City provided survey. The Contractor shall use the City of San Francisco benchmarks. Benchmark information is available from the Bureau of Street-Use & Mapping at 49 South Van Ness Avenue, Suite 300, Telephone (628) 271-2000.

- B. Contractor to locate and protect survey control points prior to starting site work; preserve permanent reference points during construction.
- C. Promptly report to City Representative the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- D. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to City Representative.

1.8 SURVEY REQUIREMENTS

- A. Provide field-engineering services, using recognized engineering survey practices.
- B. Establish a minimum of one permanent benchmark on site, referenced to established control points. Record locations with horizontal and vertical data on Project Record Documents.
- C. Establish elevations, lines and levels. Locate and layout by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for irrigation work.
- D. Periodically verify layouts by same means.

1.9 FIELD LAYOUT

- A. Dimensions, radii, etc., shown on the Drawings for field layout are approximate and are subject to adjustments to accommodate field conditions; smoothness of alignment and profiles supersede dimensions shown. Layout shall be done by the Contractor at its own expense and shall be approved by the City Representative prior to the start of any construction.

1.10 ELEVATION CONTROL

- A. Comply with ADAAG's 5% or less grade requirement for landscape work and pathways.

1.11 LINE AND GRADE FOR THE WORK

- A. The City will furnish the Contractor information on Monuments that will be used for line control and on Benchmarks, including City Datum elevations, which will be used for elevation control. All other lines and grades required for the completion of the work according to the plans shall be the responsibility of the Contractor and shall be obtained by him as Incidental Work. The City reserves the right to make minor line and grade changes of uncompleted work at any time before or after start of construction without claim by the Contractor for extra payment.
- B. A copy of the Contractor's survey notes shall be given to the City Representative weekly.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 71 33

PROTECTION OF ADJACENT CONSTRUCTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Section includes requirements for protection of existing facilities and improvements.

1.2 RELATED SECTIONS

- A. Section 00 73 20 – Existing Utility Facilities
- B. Section 01 50 00 –Temporary Facilities and Controls

1.3 EXISTING UTILITIES AND IMPROVEMENTS

- A. Notify Underground Service Alert (USA) prior to excavating in the public right of way areas so that utility companies may be advised of the work and may field mark or otherwise protect and warn the Contractor of their existing utility lines. Contact USA, telephone 1-800-227-2600, or refer to USA website for more information at: <http://www.usanorth.org/>.
 - 1. Provide reasonable access and do not hinder or otherwise interfere with any company or agency having underground facilities in removing, relocating, or protecting such facilities.
- B. Verify the actual locations and depths of all utilities indicated or field marked. Make a sufficient number of exploratory excavations up to a maximum of eight potholes at Contractor's expense of all utilities that may interfere with the work sufficiently in advance of construction to avoid possible delays to Contractor's work.
 - 1. Notify the City if such exploratory excavations show the utility location as shown or as marked to be in error.
 - 2. When utility lines are encountered within the area of Contractor's operations, notify the City Representative and the owner(s) of the utility lines sufficiently in advance for the necessary protection measures to be taken to prevent interruption of service or delay to Contractor's operations.
- C. The Contractor shall protect all existing utilities, facilities, and structures, public or private, and will be held responsible for all damage caused by the Contractor not exercising due care to avoid such damage.
- D. Overhead Contact System: Work on or under the overhead contact system shall be performed with lines and feeders energized unless shutdown of the system is granted. Notify the City Representative at least 10 days prior to performing work on energized overhead trolley wires, feeder circuits, or at substations, so that the City Representative may arrange for any necessary clearances and inspections.
 - 1. Contractor is alerted to the condition that overhead trolley wires and feeder cables distribute electrical energy at up to 700 Volts dc. Comply with the "High Voltage" provisions of the California Code of Regulations (Title 8, Division 1, Chapter 4, and Subchapter 5).

2. Take precautions to avoid accidents and damage to the overhead contact wires, and riser and feeder cables.
- E. Survey Monuments and Bench Marks: Contractor shall bring to the attention of the City Representative all survey monuments, bench marks, property line marks and the like, encountered on the work. Survey monuments, bench marks, or other survey marks or points shall not be removed or disturbed until referenced or relocated by the City Representative or other agency or party having an interest therein, and then removed only at the time and in the manner specifically approved by the City Representative. The contractor shall bring all City monument frames within the limits of the work to grade, with the express provision that any and all work associated with the removal and relocation of such frames, with their covers, shall be under the direct supervision of the City Representative, and all such work shall be considered Incidental Work. The cost of re-establishing and resetting survey monuments, bench marks or other survey marks or points lost or destroyed through the carelessness or negligence of, or inadvertently by, the Contractor or his employees, shall be at the sole expense of the Contractor.

1.4 SAFEGUARDING OF EXISTING FACILITIES

- A. The Contractor shall perform all work, including dewatering operations, in such a manner as to avoid damage to existing fire hydrants, power poles, lighting standards, and all other existing utilities, facilities, trees and vegetation, and structures. The Contractor will be held responsible for any damage due to its failure to exercise due care.
- B. Broken concrete, debris, etc., shall be immediately removed from the property site as the Contractor's property and shall be disposed of in a legal manner.
- C. The Contractor shall take adequate measures to prevent the impairment of the sewer system and to prevent construction material, pavement concrete, earth or other debris from entering a sewer, sewer structures, catch basin, or storm water inlet. The Contractor shall restore damaged utilities and facilities to a condition equal to or better than they were prior to such damage.

1.5 RESTORATION OF PAVEMENT

- A. General: All paved areas cut or damage during construction shall be replaced with similar materials and of equal thickness to match the existing undisturbed areas, except where specific resurfacing requirements are called for in the Contract Documents or in the permit requirements of the agency issuing the permit. All pavements which are subject to partial removal shall be neatly saw cut in straight lines.
- B. Conserving Distinctive Sidewalk Elements: For work located within Landmark and/or Conservation Historic Districts, all distinctive sidewalk elements (edit list per project conditions such as brick surfacing, brick gutters, granite curbs, cobblestones, non-standard sidewalk scoring and streetscape elements that appear to be 45 years or older) will be treated as potentially character defining features of their respective historic districts.
 1. Contractor shall avoid damaging and protect in place any features described above and shall notify the City Representative of any feature not identified on the plans that is in conflict with the proposed work.
 2. Granite curb shall only be replaced with concrete curb on curved sections and as part of the curb ramp construction.

- C. Temporary Resurfacing: Whenever required by the public authorities having jurisdiction, place temporary surfacing promptly after backfilling and maintain such surfacing in a satisfactory condition for the period of time before proceeding with the final restoration.
- D. Permanent Resurfacing: Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in neat straight lines. All pavement restoration shall be constructed to finished grades compatible with undisturbed adjacent pavement.
- E. Restoration of Sidewalks or Driveways: Wherever sidewalks, curbs and gutters, or driveways have been removed for construction purposes, place suitable temporary sidewalks, curbs and gutters, or driveways promptly after backfilling and maintain them in satisfactory condition for the period of time before the final restoration is been made.

1.6 JOINT SURVEY TO ESTABLISH AUTHENTICITY OF POSSIBLE CLAIMS

- A. The Contractor shall use such methods and shall take adequate precautions to prevent damage to existing buildings, structures, and other improvements during the prosecution of the work.
- B. The Contractor shall retain an experienced photographer to perform preconstruction examination and, if necessary, post-construction survey of all nearby structures, including **photographs of all catch basins within the limit of work and nearby intersections. Each catch basin shall have at least two photos, one from the top view, and one from the side view along the gutter line.** The survey shall be made using digital still photographs or digital videos saved to compact discs. The survey shall be considered incidental work and no separate payment will be made therefor.
- C. After the Contract is awarded and before the commencement of work, the City Representative will arrange for a joint examination of existing buildings, structures and other improvements in the vicinity of the work, as applicable, which might be damaged by the Contractor's operations.
- D. The examination of the exterior of existing buildings, structures, and other improvements located within twenty-five (25) feet of the construction excavation will be made jointly by authorized representatives of the Contractor, the City, and property owners under the supervision of the City Representative. The scope of each examination shall include, but is not limited to, recording of cracks in structures, settlement, leakage and the like.
- E. Records in duplicate of all observations will be prepared by the photographer, including photographs on compact discs as required. One copy shall be delivered to the Contractor, and one copy will be kept on file at the office of the City Representative. The photographer may be required to attest to the fact that he took the pictures; however, in no case, will he determine the cause cracks, settlement, leakage, or like condition nor is he being retained for the purpose of engineering evaluation.
- F. The above records and photographs are intended for use as indisputable evidence in ascertaining the extent of any damage which may occur as a result of the Contractor's operations and are for the protection of the adjacent property owners, the Contractor, and the City, and will be a means of determining whether and to what extent damage, resulting from the Contractor operations, occurred during the Contract Work.

1.7 UNFORESEEN EXISTING UTILITIES

- A. Refer to Section 00 73 20 – Existing Utility Facilities, Paragraph 1.3.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION