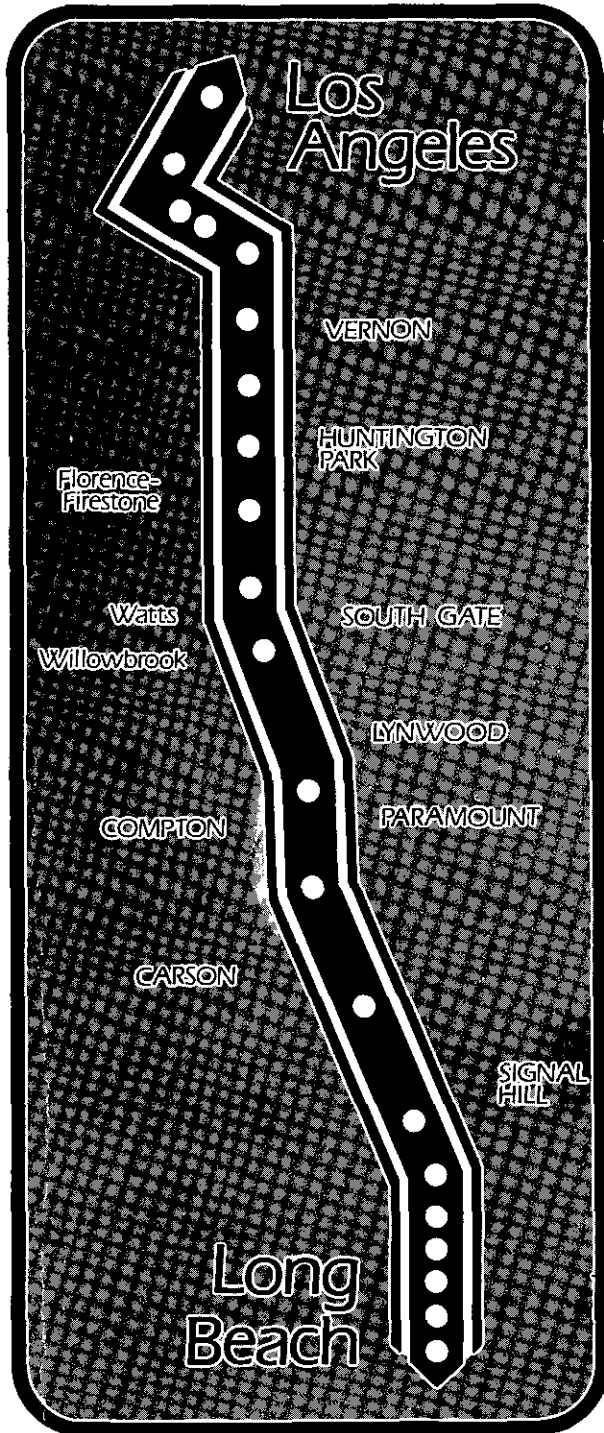


CONTRACT DOCUMENTS



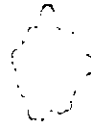
GRAPHICS AND SIGNS
CONFORMED CONTRACT NO. R01-T01-H0860
CONFORMED CONTRACT DOCUMENTS

Long Beach - Los Angeles
Rail Transit Project

Property of
MTA Planroom

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FROM BUILDING

**LOS ANGELES COUNTY TRANSPORTATION COMMISSION
LONG BEACH - LOS ANGELES RAIL TRANSIT PROJECT**



**GRAPHICS AND SIGNS
CONFORMED CONTRACT NO. R01-T01-H0860
CONFORMED CONTRACT DOCUMENTS**

**Prepared for the
LOS ANGELES COUNTY TRANSPORTATION COMMISSION
by
TRANSIT CONSULTANTS OF SOUTHERN CALIFORNIA**

**PROJECT
RECORD**

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

CONFORMED CONTRACT R01-T01-H0860

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LOS ANGELES COUNTY TRANSPORTATION COMMISSION

CONFORMED CONTRACT NO. R01-T01-H0860

GRAPHICS AND SIGNS

FORM OF CONTRACT

THIS CONTRACT is made and entered into this 13th day of September, 1989, by and between the LOS ANGELES COUNTY TRANSPORTATION COMMISSION, hereinafter called Commission, and CALIFORNIA NEON PRODUCTS, hereinafter called Contractor.

Commission, a California county transportation commission, exists under the authority of Section 130050 et seq. of the California Public Utilities Code. The parties, in consideration of the agreements herein contained, contract and agree as follows:

ARTICLE I: Commission hereby employs Contractor to perform the Work according to the terms and conditions of this Contract, and Contractor accepts such employment and agrees to perform the Work according to the terms and conditions of this Contract.

ARTICLE II: CONTRACT: This Contract consists of this Form of Contract and the following Contract Documents, including all exhibits, drawings, specifications, and documents therein, and attachments thereto, all of which are by this reference incorporated herein and made a part of this Contract:

- PART "A" - Specifications - Technical Provisions
- PART "B" - General Conditions
- PART "C" - Special Provisions
- PART "D" - Compensation and Payment Provisions
- PART "E" - Contract Compliance Manual
- PART "F" - Construction Safety Manual
- PART "G" - Contract Drawings
- PART "H" - Construction Insurance Specifications
- Appendix - Graphics Schedule

ARTICLE III: WORK TO BE PERFORMED: Contractor agrees to perform and complete in a workmanlike manner all Work required to complete the Contract in accordance with the Contract Documents. Contractor shall furnish at Contractor's own expense all labor, materials, equipment, tools, services and items of expense necessary to perform the Contract, except such materials, equipment and services as may be required in the Contract to be furnished by Commission. The Work is defined in detail in the Contract Documents, which detailed definitions govern the interpretation and performance of this Contract, but may be generally described as:

Furnishing and installation of all Graphics and Signs.
Designing and Installing of all Sign Foundations.
Designing and Installation of all Metal Sign Support Structures.

ARTICLE IV: COMPENSATION: Except as otherwise provided in this Contract, the Commission shall pay to Contractor, as full consideration for the satisfactory performance by the Contractor of this Contract, compensation in accordance with the Compensation and Payment Provisions.

ARTICLE V: PERIOD OF PERFORMANCE: Contractor shall perform and complete all Work under this Contract in accordance with the requirements of the special provisions.

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be executed as of the day and year first above written.

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

By: _____
Neil Peterson, Executive Director
("Commission")

By: _____
Ed McSpedon
Director, Design and Construction
Long Beach - Los Angeles Rail Transit Project
("Commission")

By: _____
Name _____
Title _____

By: _____
Name _____
Title ("Contractor") _____

Approved as to Form:
RICHARDS, WATSON, & GERSHON
A Professional Corporation

By: _____
Darold D. Pieper
Special Counsel to the Commission

PART A

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

PART "A"

TECHNICAL SPECIFICATIONS

CONFORMED CONTRACT NO. R01-T01-H0860

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SECTION 01010

SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of furnishing all labor, materials (except materials furnished by the COMMISSION), tools, equipment, services, and incidentals for the design, fabrication and installation of signage for stations and facilities within the rights-of-way, easements and permits. This Work includes, but is not limited to, the following:

- A. The fabrication and installation of static signage for 21 Light Rail Train (LRT) stations, associated park and ride lots, Central Control Facility (CCF) Main Yard and Shops, the corridor right-of-way from the Flower Street Station through the Long Beach loop, and all Traction Power Sub-Stations (TPSS) and C&S sites. The Work is comprised of, but is not limited to the following signage elements:
 1. Station identification
 2. Map Case identification
 3. Ticket Vending Machine identification
 4. Information Panels
 5. Directional
 6. Restrictive
 7. Vehicular Directional
 8. Directional Information - City Street and Freeway
 9. Site Identification
 10. Address and Entrance
 11. Room identification
 12. Evacuation
 13. Operational
 14. Warning
 15. Track Identification
 16. Visitor

17. Handicap
 18. Design and installation of all concrete and steel sign structures including foundations.
- B. The project includes stations and right-of-way on downtown streets, private right-of-way, and sites on private property and right-of-way.

1.2 WORK BY OTHERS

- A. The following construction interfacing with this contract will be performed by others:
1. R01-T08-C258 - The construction of private track crossings and installation of trackwork (rail, ties, and ballast) for LRT lines
 2. R01-T01-C275 - The landscaping installation
 3. R01-T01-C495 - The fencing construction
 4. R01-T06-H811 - The construction of TPSS buildings and sites
 5. R01-T06-H812 - The construction of overhead contact system
 6. R01-T07-H825 - The installation of transit signal system
 7. R01-T07-H836 - The installation and procurement of CCTV cameras, P.A. speakers, patron and emergency phones, and C.I.C cabinets
 8. R01-T07-H840 - The installation and procurement of fare vending equipment
 9. R01-T01-C265 - The construction of the Los Angeles and Mid-Corridor stations.
 10. R01-T01-C335 - The construction of the Long Beach stations.
- B. The COMMISSION may undertake or award to others, contracts for additional work, and the Contractor shall cooperate fully with such other Contractors and COMMISSION employees.

PART 2 - PRODUCTS

Products are not used in this Section.

PART 3 - EXECUTION

3.1 CONTRACTOR'S DUTIES

- A. Except as otherwise specified, furnish the following to the full extent required by the Contract:
 - 1. Labor, superintendence, and products.
 - 2. Construction equipment, tools, machinery and materials.
 - 3. Utilities required for construction and related activities.
 - 4. Other facilities and services necessary to properly execute and complete the Work.
- B. Pay all costs of legally required sales, consumer, and use taxes, and governmental fees and permits.
- C. Obtain all off-site agreements and licenses necessary to prosecute the Work, and pay all charges and fees related thereto.
- D. Perform the Work in accordance with the Contract and all applicable codes, ordinances, rules, regulations, orders, and other legal requirements of governmental bodies and public agencies having jurisdiction, including the COMMISSION.
- E. Promptly submit written notices of variances, omissions or mistakes in the Contract Drawings and Specifications. Approved changes will be made by appropriate modifications to Contract Drawings and Specifications.
- F. Maintain order, safe practices, and proper conduct among Contractor's and Subcontractors employees. The Contracting Officer may require that disciplinary action be taken against an employee for disorderly, improper, or unsafe conduct. Should an employee of the Contractor be dismissed as a result of that employee's misconduct, incompetence, or unsafe practices, or combinations thereof, that employee shall not be rehired for the duration of the Contract in order to comply fully with COMMISSION'S safety policies.
- G. Prosecute the Work as specified and in a timely manner. Submit schedule of Work which will be performed at times other than during the normal eight-hour working day, daylight hours, and five-day working week to the Construction Manager for review and acceptance not less than 48 hours in advance of those times. Construction operations will normally be confined to the hours between dawn and dusk. Approval to work at night may be obtained after Contractor presents a written program outlining special precautions to be taken to control the extraordinary hazards presented by night work. That program shall include, but not be limited to, supplementary lighting of work areas, availability of medical facilities, security precautions, and noise limitations.

3.2 COORDINATION

- A. Coordinate prosecution of Work with those governmental bodies, and other contractors, performing work on, and adjacent to, the Worksite. Eliminate or minimize delays in the Work and conflicts with those bodies and contractors. Confirm coordination measures for each individual case with the Construction Manager by memorandum.
- B. In the coordination effort with Work by others, the Contractor shall obtain and refer to equipment locations and other layouts, as available, to avoid interface problems.
- C. The COMMISSION reserves the right to permit access to the site of the Work for the performance of Work by other contractors and persons at such times that the COMMISSION deems proper. The exercise of such reserved right shall in no way, nor to any extent relieve the Contractor from liability for loss and damage to the Work due to, or resulting from its operations or from responsibility for complete execution of the Contract. The Contractor shall cooperate with other contractors and persons in all matters requiring common effort "within reason".

3.3 CONTRACTOR USE OF WORKSITE

- A. Confine Worksite operations to areas permitted by law, ordinances, permits, and the Contract.
- B. Consider the safety of the Work and that of people and property on and adjacent to the Worksite when determining amount, location, movement, and use of materials and equipment on Worksite.
- C. Do not load Worksite with equipment and products which would interfere with the Work.
- D. Protect products, equipment and materials stored on Worksite.
- E. Relocate stored products, equipment and materials which interfere with operations of COMMISSION, governmental bodies, public and private utilities, and other contractors.
- F. Secure additional storage and work areas needed for operations at no additional expense to the COMMISSION.
- G. Coordinate scheduling of Work to be performed on private property with property owner and property tenant in order to minimize inconvenience to the property owner and property tenant.

- H. Protect the general public and residents within limits of Work from Work-related activities; do not unduly inconvenience those persons by Work activities. Work conducted in and on streets and highways shall conform to the Worksite Traffic Control Plan (WTCP) as approved by the local governmental authority having jurisdiction.

END OF SECTION

SECTION 01040

COORDINATION WITH SPTC

(SOUTHERN PACIFIC TRANSPORTATION COMPANY)

PART 1 - GENERAL

1.1 DESCRIPTION

This Section describes the requirements for coordination with Southern California Transportation Company (SPTC) when work by the Contractor involves operation upon the SPTC Right-of-Way.

- A. Contractor shall not begin work upon SPTC's Right-of-Way until SPTC has been furnished the insurance required by its Agreement with COMMISSION and SPTC's Designated Representative has advised the COMMISSION that such insurance is in accordance with the Contract. If the required insurance is provided by Contractor, the required insurance shall be kept in full force and effect during the performance of work and thereafter until Contractor removes all tools, equipment, and material from SPTC's property and cleans the premises in a manner reasonably satisfactory to SPTC.
- B. Contractor shall give 48 hour notice in writing to SPTC's Designated Representative before commencing work in connection with construction upon SPTC's Right-of-Way and shall observe SPTC's rules and regulations with respect thereto. All work upon SPTC's Right-of-Way shall be done at such times and in such manner as not to interfere with or endanger the operations of SPTC. SPTC shall have the right to order Contractor to temporarily cease operations in the event of an emergency. In the event such an order is given, Contractor shall immediately notify the Construction Manager of the order.
- C. SPTC will cooperate with Contractor so that its work may be handled in an efficient manner, and will cooperate with Contractor in enabling it to use SPTC's track area in performing its work, but Contractor shall have no claim for damages or extra compensation from SPTC or the COMMISSION in the event work is held up by SPTC forces or because of SPTC's trains.
- D. Contractor shall comply with the rules and regulations of SPTC or the instructions of its Designated Representative in relation to the manner of protecting the tracks and property of SPTC and the traffic moving on such tracks, as well as the wires, signals, and other property of SPTC, its tenants or licensees, at and in the vicinity of the Work during the period of construction.

- E. Contractor shall perform its work in such manner and at such times as shall not endanger or interfere with the safe operation of the tracks and property of SPTC and the traffic moving on such tracks, or the wires, signals and other property of SPTC, its tenants or licensees, at or in the vicinity of the Work.
- F. Except as otherwise provided herein, Contractor's operations shall not infringe on the following minimum clearance from any SPTC railroad track:
- 10' - 0" horizontal from centerline of track
 - 22' - 6" vertically above top of rail
 - 15' - 0" horizontal from center line of track for the storage of material and equipment.
- G. Any proposed infringement on the above clearances due to Contractor's operations shall be submitted to SPTC's Designated Representative and shall not be undertaken until approved by the SPTC's Designated Representative nor until SPTC's Designated Representative has obtained any necessary authorization from any governmental body or bodies having jurisdiction thereover. No extra compensation will be allowed in the event the Work is reasonably delayed pending SPTC's Designated Representative's approval or pending any necessary authorization from any governmental body.
- H. In the case of impaired vertical clearance above top of rail, SPTC shall have the option of installing, at Contractor's expense, such protective devices as SPTC deems necessary for protection of SPTC trainmen or rail traffic.
- I. The details of the construction affecting the SPTC tracks and property not already included in the contract plans shall be submitted to SPTC through its Designated Representative for approval before such work is undertaken.
- J. If Contractor desires to move its equipment or materials across SPTC's track at locations other than public crossings, it shall obtain permission from SPTC through SPTC's Designated Representative, and should it be required, Contractor shall enter into a private crossing agreement with SPTC. The crossing installation, if required, together with any warning devices, for the use of Contractor, shall be at the expense of Contractor. Contractor shall furnish its own flagmen to control movements of vehicles on the private crossing roadway. SPTC, acting through its Designated Representative, may assign a crossing watchman at Contractor's sole cost and expense to control movement of Contractor's vehicles and equipment on and across SPTC's tracks.
- K. Contractor shall, upon completion of the Work, promptly remove from the Right-of-Way of SPTC, tools, implements, and other materials, whether brought upon the Right-of-Way by Contractor or any subcontractors, employee or agent of Contractor or of any subcontractor, and leave the Right-of-Way in a reasonably clean and presentable condition.

- L. SPTC representatives, conductors, flagmen or watchmen will be provided by SPTC at expense of Contractor to protect SPTC facilities, property and movements of its trains or engines. In general, SPTC will furnish such personnel or other protective services as follows:
1. When any part of any equipment is standing or being operated within 10 feet, measured horizontally, from centerline of any track on which trains may operate, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.
 2. For any excavation below elevation of track subgrade if, in the option of SPTC's Designated Representative, track or other railway facilities may be subject to settlement or movement.
 3. During any clearing, grubbing, or grading in proximity to SPTC facilities which, in the opinion of SPTC's Designated Representative, may endanger SPTC facilities or operations.
 4. During any or Contractor's operations when, in the opinion of SPTC's Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.
- M. The determination of the cost of personnel for protection of SPTC facilities and protective devices to be used as a basis for the submitting of bids to COMMISSION shall be the responsibility of the prospective bidder.
- N. SPTC will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by SPTC's forces in connection with its railroad operation at expense of COMMISSION. This work by SPTC will be done by its own forces and it is not a part of the Work under this Contract.
- O. Contractor's operations that control traffic across or around SPTC facilities shall be coordinated with and approved by the SPTC's Designated Representative.

END OF SECTION

SECTION 01200

CONTRACT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Work specified in this Section requires the Contractor, along with his Superintendent and Safety Engineer, to attend meetings scheduled by the Construction Manager for the collection and dissemination of information related to the subject Contract.
- B. The Construction Manager will prepare the minutes of each meeting and distribute them to each of the participants.

1.2 CONSTRUCTION MANAGER'S MEETINGS

The Contractor will be advised of times, dates, and places of Construction Manager-scheduled Contract meetings.

PART 2 - PRODUCTS

Products are not required for this Section.

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION MEETING

A pre-construction meeting will be scheduled by the Construction Manager after receipt of the required signed Contract Documents, prior to issuing the Notice to Proceed. The purpose of this meeting is to introduce the COMMISSION's Representatives for Safety and Quality Assurance and Construction Management to their counterparts in the Contractor's organization and to establish lines of communication between these representatives.

- A. The Construction Manager will distribute a notice of this meeting, along with an agenda of the subjects to be addressed, not less than four working days prior to such meeting.
- B. The Construction Manager will explain and discuss the responsibilities and authorities of the COMMISSION, the Contracting Officer, the Engineer, and the Construction Manager's Organization.
- C. The Contractor, the Contractor's Superintendent, Safety Engineer, Equal Employment Opportunity (EEO) Officer, Subcontractor Representatives and Community Relations Representatives shall attend this meeting.

D. The Construction Manager or the Contractor will provide the following information for this meeting:

1. The Construction Manager will discuss EEO and affirmative action requirements along with the Community Relations functions.
2. The Construction Manager will explain the requirements of labor provisions stipulated in the LACTC Continuation of Work Agreement.
3. The Construction Manager will explain and discuss insurance, laws, codes, traffic regulations, permit requirements of public agencies and their regulations.
4. The Construction Manager will discuss procedures for processing Change Orders, Shop Drawings, product data, and samples.
5. The Construction Manager will discuss monthly estimate cutoff dates.
6. The Construction Manager will discuss partial and final payments.
7. The Contractor will introduce Contractor's representatives, and briefly describe each person's responsibilities.
8. The Contractor will distribute and discuss a list of major Subcontractors, sequence of critical Work, and the preliminary progress schedule for the first 90 days of construction.
9. The Contractor will discuss use of office, storage areas, construction areas, and temporary easements.
10. The Contractor will define arrangements for safety, first aid, emergency actions, and security.
11. The Contractor will define housekeeping procedures.
12. The Contractor will discuss construction methods, quality control, and inspection and coordination of Work with the COMMISSION's system as a whole.
13. The Contractor will submit the construction sequencing of entire Contract.
14. The Contractor will discuss coordination with the work of other contractors and procedures for sharing access to the Worksite.
15. The Contractor will discuss deliveries and priorities of major equipment.

16. The Contractor will discuss breakdown of lump sum items.
17. The Contractor will discuss Construction Progress Schedule.
18. The Contractor shall discuss employee identification practices to be used at the job site.

The explanations provided by the Construction Manager do not amend, supersede or alter the terms or meaning of any Contract Document, and the Contractor shall not claim reliance on such explanations as a defense to any breach or failure by the Contractor to perform as specified in the Contract.

3.2 CONSTRUCTION PROGRESS MEETINGS

Progress meetings will be scheduled bi-weekly and more often as necessary by the Construction Manager for the competent and timely execution of the Contract.

- A. Progress review meetings will be held at the Worksite. These meetings will be chaired by the Construction Manager.
- B. The Contractor's personnel, as listed in Article 3.1C, shall attend.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section summarizes the requirements for the submittal of documents to the Construction Manager, which are defined in these Specifications. It also describes the procedures for "Supplemental" submittals.

PART 2 - PRODUCTS

2.1 INITIAL SUBMITTALS

- A. Submittal Schedule - Identify the submittals which will be required and determine the date on which each submittal will be required in conformance with the schedule specified in Section 01310, Critical Path Schedule. Submit list of submittals to the Construction Manager within 30 days after Notice to Proceed and update monthly.
- B. Title Block - show the following information:
 1. Date and revision dates.
 2. Contract title and number.
 3. The names of Contractor, Subcontractor, supplier, manufacturer, and, when applicable, the seal and signature of an engineer registered in the State of California, for the involved discipline.
 4. Identification of product by either description, model number, style number, serial number, or lot number.
 5. Subject identification by Contract Drawing or Specification reference.
- C. Action Block - Include a blank space, three inches by four inches, in the lower right corner, just above the title block, in which the Construction Manager may indicate the action taken.
- D. Make submissions sufficiently in advance so that the Construction Manager can review and accept them not less than 30 days before Work represented by those submittals is scheduled to be performed.
- E. Allow a maximum of 30 days for review of each submittal cycle by the Construction Manager.
- F. Ship submittals prepaid.

G. Accompany submittals with a Contractor Transmittal Form containing the following information:

1. Contractor's name, address, and telephone number.
2. Submittal number and date.
3. Contract title and number.
4. Supplier's, manufacturer's or Subcontractor's name, address, and telephone number.
5. Subject identification including Contract Drawing and Specification reference.
6. Identification of deviations from Contract Documents.
7. Contractor's stamp and signature certifying his review.

H. Changes in accepted submittals will not be permitted unless those changes have been accepted, in writing, by the Construction Manager.

2.2 SUPPLEMENTAL SUBMITTALS

Supplemental submittals initiated by the Contractor for consideration of corrective procedures shall contain sufficient data for review. Make supplemental submittals in the same manner as initial submittals.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

The Contractor shall review submittals, stamp and sign as reviewed and approved, prior to submission to the Construction Manager.

3.2 CONSTRUCTION MANAGER'S REVIEW

- A. Submittals will be reviewed by the Construction Manager for conformance to requirements of the Contract Drawings and Specifications. Review of a separate item will not constitute review of an assembly in which the item functions. Review and Acceptance will not relieve Contractor from his responsibility for accuracy of submittals, for conformity of submittals to requirements of Contract Drawings and Specifications, for compatibility of described product with contiguous products and the rest of the system, or for protection and completion of the Contract in accordance with the Contract Drawings and Specifications.
- B. The Construction Manager will review the submittals for general conformance with the Contract Documents and mark, sign, and date the review stamp.

C. The marks have the following meanings:

1. **ACCEPTED** is an acceptance, and means that every illustration and description appears to conform to the respective requirements of the Contract Documents.
2. **ACCEPTED AS NOTED** is an acceptance, and means that the illustration and description appears to conform to the respective requirements of the Contract Documents after changes in recognition of the reviewer's comments. Submittals so marked need not be resubmitted.
3. **REVISE AND RESUBMIT** means that the submittal is unacceptable and shall be corrected and resubmitted.
4. **NOT ACCEPTED** means that the submittal is not acceptable and that a new submittal in accordance with the Contract Documents shall be made.

3.3 **CONTRACTOR RESPONSIBILITIES**

- A. Coordinate each submittal with the requirements of the Work; place particular emphasis upon ensuring that each submittal of one trade is compatible with other submittals of that trade and submittals of other trades.
- B. Contractor's responsibility for errors and omissions in submittals and associated calculations is not relieved by the Construction Manager's review, correction and acceptance of submittals.
- C. Contractor's liability to the **COMMISSION** in case of deviations in the submittals from the requirements of the Contract Documents is not relieved by the Construction Manager's review and acceptance of submittals containing deviations unless the **COMMISSION** expressly approves the deviation through the issuance of a change notice.
- D. The Contractor shall maintain a file of all approved submittal documents at the Work Site.

END OF SECTION

SECTION 01310

CRITICAL PATH SCHEDULE

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the preparation of a preliminary schedule, construction schedule, related narratives and monthly progress reports, all encompassing complete performance of Contract requirements.

1.2 PLANNING

- A. The total contract time and intermediate milestones, as indicated in the Special Provisions or elsewhere in the contract documents, are contract requirements.
- B. The Contractor shall prepare a work plan to complete the work within the contract time, and complete those portions of work relating to each intermediate milestone date and other contract requirements. The Contractor shall generate a computerized CPM schedule in Precedence Diagram Method (PDM) format for the work. The Contract Schedule, supporting narrative, and over-all progress curve shall be submitted for approval within 45 days after Notice to Proceed. Within 14 days the Construction Manager will respond with approval or direction to change and resubmit within 10 days. Failure of the Contractor to have a Contract Schedule approved by the Construction Manager will be considered cause for withholding progress payment.
- C. To the extent that the Contract Schedule or any revisions thereof contains anything not jointly agreed upon, or fails to show anything jointly agreed upon, it shall not be considered to have the approval of the Construction Manager. Failure to include any work item required for performance of this Contract shall not excuse the Contractor from completing all work within applicable completion dates, regardless of the Construction Manager's approval of the schedule.
- D. Failure of the Contractor to comply with this Section will be considered cause for withholding progress payment or termination for default.

1.3 SUBMITTALS

Refer to Section 01300, Submittals, for submittal procedures. Submit the following as indicated:

- A. Preliminary Schedule (with narrative)
- B. Monthly Progress Report
- C. Contract Schedule Data (with narrative)

- D. Contract Schedule Change Request
- E. "As-Built" Contract Schedule.

PART 2 - PRODUCTS

Products are not required in this Section.

PART 3 - EXECUTION

3.1 PRELIMINARY SCHEDULE

- A. The Contractor shall prepare a Preliminary Schedule covering the first 90 calendar days. This Preliminary Schedule shall be submitted at the pre-construction meeting, and be accompanied by a narrative description. Within 14 days, the Construction Manager will respond with approval or direction to change and resubmit within 10 days. Preliminary Schedule format may be either critical path or bar chart.
- B. The Preliminary Schedule shall show all significant work tasks that occur in the first 90 days, including planning, mobilization, procurement, fabrication, and construction. It shall identify work items or milestones that affect or are affected by the Commission, utilities, and other third parties; and it shall list major data submittals required by the Contract.
- C. The Preliminary Schedule shall be accompanied by a narrative describing the Contractor's approach to mobilization, procurement, and construction during the first 90 days. The narrative shall elaborate on the basis for durations, production rates, major equipment to be used, and shall identify all major assumptions used to develop the schedule.
- D. During the first 90 day period, the Contractor shall submit a Monthly Progress Report at the end of each month following Notice to Proceed. This narrative report shall describe progress of the work, problems and proposed corrective action, and work status. The report shall be accompanied by an updated Preliminary Schedule showing progress and forecasts. The Contractor's Monthly Progress Report shall be submitted prior to the Contractor's Application for Progress Payment.

3.2 CONTRACT SCHEDULE

- A. The Contract Schedule shall be a computerized CPM schedule in PDM format that includes:
 - 1. Work items identified in accordance with the Work Breakdown Structure (WBS) to be provided by the Construction Manager upon notice of award.

2. The order, sequence, and interdependence of all significant work items including construction; procurement, fabrication, and delivery of critical or special materials and equipment; submittals and approvals of critical samples, shop drawings, procedures, or other documents that could have a schedule impact.
 3. Work items of the Commission, utilities, and other third parties that may affect or be affected by Contractor's activities.
 4. Proper referencing of all work items to identify subcontractors or other performing parties.
 5. Work item durations not to exceed 20 working days.
 6. Work items that are resource loaded to show the direct craft man-hours estimated to perform the work including work by subcontractors.
 7. A narrative that explains the basis for the Contractor's determination of construction logic and estimated durations and man-hours. It shall include estimated quantities and production rates, hours per shift, work day per week, and types; numbers, and capacities of major construction equipment to be used.
- B. The Contract Schedule shall be prepared to include the data for the total Contract and the critical path shall be identified, including critical paths for interim completion dates. Scheduled start or completion dates imposed on the schedule by the Contractor shall be consistent with Contract milestone dates. Milestone events shall be the scheduled dates specified in the Special Provisions and shall be prominently identified and connected to the appropriate work item, denoting its start or completion.
- C. The Contractor shall submit the following documents for the Construction Manager upon completion of preparation of the Contract Schedule.
1. A time-phased plot of the CPM schedule network in PDM format showing all logic ties.
 2. Various computer generated PDM Schedule Reports that contain the following data for each work item: identification, description, duration, early start and early finish, and late start and late finish, and total float. The work items shall be sorted by float, early start, subcontractor, or other sorts mutually agreed to. The reports shall also show the logic ties of successor and predecessor work items.
 3. A physical progress "S" curve derived from the PDM Schedule and against which physical progress performance will be measured.
 4. The narrative described in 3.2A.7.

3.3 PROGRESS REPORTING

- A. At the end of each month, the Contractor and Construction Manager shall agree on the progress of the work and the Contractor shall update the PDM schedule accordingly. The updated PDM Schedule is a prerequisite to the submittal of the Contractor's Application for Progress Payment.
- B. The Contractor shall submit a monthly Progress Report consisting of a written narrative and various PDM Schedule reports. This report will be reviewed in a joint meeting of the Contractor and Construction Manager.
 - 1. The narrative report shall describe overall progress of the work, provide a critical path analysis, discuss significant problems with proposed corrective action, and show the status of major changes.
 - 2. The PDM Schedule reports shall include tabular reports for completed work items, for in-progress work items, and for work items scheduled to start in the next 30 days.
 - 3. The physical progress curve shall be updated to show actual progress.
- C. If the latest completion time for any significant work item does not fall within the time allowed by the Contract Schedule, the sequence of work and/or duration shall be revised by the Contractor through concurrent operations, additional manpower, additional shifts, or overtime, until the schedule produced indicates that all significant contract completion and occupancy dates will be met. No additional costs will be allowed if such expediting measures are necessary to meet the agreed completion date or dates except as provided elsewhere in the Contract Documents.

3.4 SCHEDULE CHANGES

- A. The Contractor's request for Contract Schedule changes shall be made on the latest revised network diagram and be accompanied by a narrative description and justification for the change. Minor revisions approved at monthly progress review meetings are not considered as changes in this context.
- B. The Contract Schedule may be changed when one or more of the following occur:
 - 1. When a Change Order significantly affects the Contract completion date or sequence of work items.
 - 2. When the Contractor elects to change the sequence or duration of work items affecting the critical path.

3. When the Construction Manager directs a change that affects the Milestone date(s) specified in the Special Provisions or alters the length of a critical path.

3.5 CONTRACT EXTENSIONS

If the Contractor is granted an extension of time for completion of any milestone or Contract completion date under the provisions of the Contract, the determination of the total number of days extension will be based upon the current analysis of the schedule, and upon all data relevant to the extension. Such data shall be incorporated in the next monthly update of the schedule.

The Contractor acknowledges and agrees that delays in work items which, according to the schedule analysis, do not in fact actually affect any milestone dates or the Contract completion date shown on the CPM network at the time of the delay, will not be the basis for a contract extension.

3.6 DOCUMENTATION

After all Contract work items are complete, the Contractor shall submit an "as-built" Contract Schedule showing actual start and finish dates, for all work items and milestones.

END OF SECTION

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

**FORM OF CONTRACT
OR "CONTRACT AGREEMENT"**

CONFORMED CONTRACT NO. R01-T01-H0860

FOR

GRAPHICS AND SIGNS

BETWEEN

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

AND

CALIFORNIA NEON PRODUCTS

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of preparing and submitting Shop Drawings, Product Data, Samples, and record documents required by other Specification Sections.

1.2 SUBMITTALS

A. Refer to Section 01300, Submittals, for submittal procedures.

B. Quantities

1. One reproducible sepia and five prints of each Shop Drawing.
2. Four copies of manufacturer's calculations, and six copies of manufacturer's standard data.
3. Six copies of manufacturer's printed installation, erection, application, and placing instructions.
4. Three samples of each item specified in the various Specification Sections, unless otherwise specified.
5. Six copies of inspection, test reports, and certificates of compliance.
6. Six copies of Material Safety Data Sheets (MSDS).

1.3 CHANGES

Changes in products for which Shop Drawings, Product Data or Samples have been submitted will not be permitted unless those changes have been accepted and approved in writing by the Construction Manager as provided in Section 01630, Substitutions.

1.4 QUALITY ASSURANCE

Shop Drawings and record documents shall be prepared to a high standard of quality, such as that set forth in MIL-STD-100, ANSI Standard Drafting Manual Y14 or other relevant lower tier specification defining equal drafting quality for microfilming.

PART 2 - PRODUCTS

2.1 SHOP DRAWINGS

- A. Prepare Shop Drawings on a reproducible sepia sheet size of 22 inches by 34 inches to a scale large enough to easily depict and annotate each of the various items.**
- B. Include the following as they apply to the subject:**
 - 1. Contract title and number.**
 - 2. Respective Contract Drawing numbers.**
 - 3. Applicable Specification Section numbers.**
 - 4. Relation to adjacent structure or materials.**
 - 5. Field dimensions, clearly identified as such.**
 - 6. Applicable standards, such as ASTM or Federal Specification number, AREA, AASHTO and pertinent railroad authority specifications or standards.**
 - 7. Identification of deviations from the Contract Drawings and Specifications.**
 - 8. Contractor's stamp, initialed or signed, certifying:**
 - a. Verification of field measurements.**
 - b. Review of submittals for compliance with Contract requirements.**
 - c. Compatibility of the Work shown thereon with that of affected trades.**

2.2 PRODUCT DATA

- A. Modify manufacturer's standard and/or schematic drawings to delete information which is not applicable to the Contract. Supplement standard information with additional information applicable to this Contract.**
- B. Modify manufacturer's standard(s) diagrams, schedules, performance charts, illustrations, calculations, and other descriptive data to delete information which is not applicable to the Contract. Indicate dimensions, clearances, performance characteristics, capacities, and any other diagrams, as applicable.**
- C. Modify erection, application, and placing instructions to delete information which is not applicable to the Contract.**

D. Include the following:

1. Contract title and number.
2. Respective Contract Drawing numbers.
3. Applicable Contract Specification Section numbers.
4. Applicable standards, such as ASTM or Federal Specification number, AREA, AASHTO, and pertinent railroad authority specification or standards.
5. Identification of deviations from the Contract Drawings and Specifications.
6. Contractor's stamp, initialed or signed, certifying:
 - a. Dimensional compatibility of the product with the space in which it is intended to be used.
 - b. Review of submittals for compliance with Contract requirements.
 - c. Compatibility of the product with other products with which it is to perform or with which it is to be placed in juxtaposition.

E. Certificates of Compliance shall be submitted for those products for which no samples and test results are specified. Copy of certificate shall also accompany the product for which the certificate is prepared. The certificates shall:

1. state that the product complies with the respective Contract Specification and Contract Drawing requirements;
2. be accompanied by a certified copy of test results pertaining to the product;
3. show the submittal date, Contractor's name and address, Contract Title and Number, product represented and its location in the Contract, producer's name, product trade name and catalog number, place of product origin, test date, testing organization's name and address, quantity of the product to be furnished, and related Contract Drawing and Specification Section numbers;
4. be signed by an officer or another authorized representative of the producer and notarized;
5. be submitted in six copies; and
6. be received by the Construction Manager not later than 30 days before the products are to be installed.

2.3 SAMPLES

- A. Use office samples of sizes and quantities to clearly illustrate full color range and functional characteristics of products and materials, including attachment devices.
- B. Show the following information:
 - 1. Contract title and number.
 - 2. Respective Contract Drawing numbers.
 - 3. Applicable Specifications Section numbers.
 - 4. Applicable standards, such as ASTM or Federal Specification number.
 - 5. Identification of deviations from the Contract Drawings and Specifications.
 - 6. Contractor's stamp, initialed or signed, certifying:
 - a. Dimensional compatibility of the product with the space in which it is intended to be used.
 - b. Review of submittals for compliance with Contract requirements.
 - c. Compatibility of the product with other products with which it is to perform or which will be next to it.
- C. Furnish required samples at no additional cost to the COMMISSION.

PART 3 - EXECUTION

3.1 CONTRACTOR RESPONSIBILITIES

- A. Verify field measurements, catalog numbers, and similar data.
- B. Do not start Work for which submittals are required until submittals bearing the stamp of the Construction Manager and signature indicating review and acceptance have been received.
- C. Before making submittals, ensure that products will be available in the quantities and in the time required by the Contract.
- D. Submit a final, corrected, reproducible sepia of as-built Contract Drawing, showing the Work as actually installed, placed, erected, and applied.

3.2 REVIEW BY THE CONSTRUCTION MANAGER

- A. A reproducible Shop Drawing, one copy of marked-up Shop Drawings, one copy of product data, and one sample will be returned to Contractor by the Construction Manager within 30 days after submittals have been received.
- B. Contractor's responsibility for errors and omissions in submittals for compatibility will not be reduced, waived or otherwise limited by the review and acceptance of submittals by the Construction Manager.

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Work specified in this Section consists of preparing and submitting a Schedule of Values and a Schedule of on-Worksite Material Allowances as Referenced in Article 37 of the General Conditions and, if the schedules are affected by Change Orders, of preparing and submitting updated copies of the schedules.
- B. Schedule of on-site Material Allowances - A detailed cost breakdown for materials which will be temporarily stored prior to their being installed, and for which the Contractor seeks partial payments.
- C. Upon notice of award, the Contractor will be furnished a copy of the COMMISSION's required Construction Code of Accounts. These codes are the basis for reporting to the COMMISSION the monthly status of the scheduled activities within the Bid Items as required in Article 37, General Conditions.

1.2 SUBMITTAL

- A. Refer to Section 01300, Submittals, for submittal procedure.
- B. Identify items in the Schedule of Value and Material Allowances with the Specification Section numbers, Specification Section title, and Bid Item number.
- C. Upon request by the Construction Manager, support values given with data which will substantiate the correctness of the values.
- D. Schedules will be used only as a basis for Contractor's Application for Progress Payment.

1.3. REVIEW AND RESUBMITTAL

If review by the Construction Manager indicates that changes to the schedules are required, revise and resubmit schedules in the same manner as the original schedules were prepared and submitted.

PART 2 - PRODUCTS

Products are not required for this Section.

PART 3 - EXECUTION

3.1 PREPARING SCHEDULE OF VALUES

- A. Upon approval by Construction Manager, break down Bid Item costs as follows:
 - 1. Delivered cost of product, with taxes paid.
 - 2. Total installation cost, with overhead and profit.
- B. Break down costs of each lump sum and, in accepted circumstances, unit price Bid Item to list major products and major operations for which Contractor seeks to receive progress payments to recover his costs for that Bid Item.
- C. Upon application from the Contractor, Construction Manager may waive requirements of Paragraphs 3.1A, and B.

3.2 PREPARING SCHEDULE OF MATERIAL ALLOWANCES

- A. Separate schedules of unit prices, indicate whether products will be stored on the Worksite, or off the Worksite in accordance with Article 37 of the General Conditions. Schedules shall show quantities and types of products which will be stored.
- B. Allowances consist of only the net cost of the product, the cost of delivery and unloading at the storage site, and the cost of sales taxes.

END OF SECTION

SECTION 01453

QUALITY CONTROL REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

This Section identifies the Quality Control (QC) activities to be performed by the Contractor during all phases of the Contract. Detailed inspection and test requirements are shown in the individual sections of this document where appropriate. All QC responsibilities lie with the Contractor with the exception of those additional inspections, tests, and/or audits that may be required and will be conducted by the Construction Manager or his designee.

The LACTC Quality Assurance Procedures Manual (QAPM) will be available to the Contractor for guidance in preparing the Quality Control Plan (QCP).

1.2 SUBMITTALS

- A. Refer to Section 01300, Submittals; and Section 01340, Shop Drawings, Product Data, and Samples, for detailed procedures.
- B. The Contractor shall submit his QCP to the Construction Manager for approval. Work shall not start until such approval has been obtained. The QCP shall contain a comprehensive account of the Contractor's QC procedures that shall be applied throughout the Project. It shall include, but shall not be limited to, the following:
 1. Organization chart, identifying the manager of the QC Department by name, showing that this position is outside the production staff with clear lines of authority for QC
 2. A plan for the development of the detailed inspection and test procedures that is in accordance with codes, laws, ordinances, and the Contract specifications and referenced standards.
- C. The Contractor shall implement the QCP and instruct, in accordance with the QCP, the workmen, subcontractors, material suppliers, and others who perform Quality Control tasks. The instructions shall include, but shall not be limited to, the following:
 1. Methods to identify potential quality problems with work or materials, and appropriate directions for solving and/or reporting such problems
 2. Establishing preventive measures and maintaining effective QC practices in all areas of the project.

- D. The Contractor shall submit a list of suppliers (subcontractors) that shall include items to be supplied, item numbers, specifications, inspection and test requirements, performance data, anticipated inspection test dates, and other pertinent information as appropriate. The list shall be submitted to the Construction Manager prior to the performance of required inspections and tests.
- E. The Contractor shall submit to the Construction Manager samples of items or materials in accordance with the Contract Specifications (See Subsection 1.12, SAMPLES).

1.3 DOCUMENTATION

- A. All activities necessary to satisfy the referenced standards and specifications shall be designated by written procedures. Documentation shall reference the appropriate acceptance criteria.
- B. Specific procedures, instructions, or checklists, other than those contained in the specifications, shall be developed by the Contractor. These documents shall be available to the Construction Manager by request for review and approval.
- C. The Contractor shall not change or alter approved submittals, procedures, specifications, drawings or any other pertinent documentation without the Construction Manager's written authorization.
- D. QC procedures, methods, and current documents shall be made available at the locations where they are to be used.
- E. All records and documents which are quality related shall be prepared, identified, and maintained by the Contractor and shall be made available to the Construction Manager upon request. Records shall be protected from damage, deterioration, or loss. Retention time for all quality records shall be not less than three (3) years (also see General Conditions Section 50J).

1.4 IDENTIFICATION AND CONTROL OF ITEMS AND MATERIALS

Controls shall be established to ensure that items or materials that have been accepted through shipping or receiving inspection are used or installed. Identification and traceability shall be provided throughout all inspections, test activities, and records. For stored items, provisions shall be made for the control of item/material identification, consistent with the expected duration and type of storage.

1.5 INSPECTIONS AND TESTS

- A. The Contractor shall employ the services of an independent test laboratory. Inspections and tests to verify conformance with the specified requirements shall be executed by the Contractor's QC personnel or their test laboratory. The characteristics to be inspected or tested and the methods to be employed shall be specified. Inspection and test results shall be documented and shall

conform to acceptance criteria. Acceptance inspections/tests shall be performed by designated personnel other than those directly performing the work.

- B. When the specifications, laws, ordinances, rules, regulations, or orders of any public agency having jurisdiction, require the Construction Manager's surveillance of inspections or tests, the Contractor shall notify the Construction Manager of the place, date, and time 48 hours prior to the inspection/test operation.
- C. The Contractor shall bear all costs for inspections and tests conducted by other than the Construction Manager or his designee.
- D. Inspection/test results shall be submitted to the Construction Manager not later than forty-eight (48) hours after completion of inspections/tests and prior to incorporation of the item(s) into the Work. Certificates of Compliance shall be submitted fifteen (15) days prior to the products' incorporation into the Work.
- E. Inspection and tests, conducted by persons or agencies other than the Contractor, shall not in any way relieve the Contractor of his responsibility and obligation to meet all specifications and the referenced standards.
- F. Special inspections or tests may be required in addition to those tests already performed. The Contractor shall notify the Construction Manager at least forty-eight (48) hours in advance of the additional inspections or tests.
- G. When special inspections or tests prove that the item or material does not meet all applicable specifications and requirements, the cost incurred for the inspections or tests and the additional costs incurred for the Construction Manager's service of witnessing the inspection or test shall be borne by the Contractor.
- H. Records (reports) of inspection and test activities are quality records and shall be maintained, in a manner that provides integrity of item identification, acceptability, and traceability. Reports shall identify the following:
 - 1. Name of item(s) inspected/tested
 - 2. Quantity of items
 - 3. Inspection/test procedure reference
 - 4. Date
 - 5. Name of inspector/tester
 - 6. Observations/comments
 - 7. Specified requirements

8. Acceptability
9. Deviations/nonconformances
10. Corrective action
11. Evaluation of results
12. Signature of authorized evaluator.

1.6 CONTROL OF MEASURING AND TEST EQUIPMENT

The Contractor shall select his measuring and test equipment in such a manner as to provide proper type, range, accuracy, calibration and tolerance for determining compliance with specified requirements. Measuring and test devices shall be calibrated, adjusted, and maintained at prescribed intervals prior to use, based upon equipment stability and other conditions affecting measurement. Provisions shall be made for the proper handling and storage of equipment. Calibration shall be accomplished using certified standards that have a known traceable relationship to the National Bureau of Standards. Every calibrated measuring and test device shall show the current status, date of last calibration, and the due date for the next calibration. Calibration records shall be maintained as quality records and shall be made available for inspection upon the Construction Manager's request.

1.7 INSPECTION, TEST, AND OPERATING STATUS

Materials, items, and installations shall show appropriate status identifications in order to ensure that the required inspections and tests are performed properly.

1.8 NONCONFORMANCES

- A. The Contractor shall provide the following in order to prevent use of items/materials that do not conform to the specifications:
 1. Identification of nonconformances
 2. Documentation
 3. Evaluations/recommendations
 4. Separation/removal
 5. Notification to the Construction Manager.
- B. The dispositions for nonconforming items/materials will be made by the Construction Manager.

1.9 CORRECTIVE ACTION

Nonconformances shall be identified, documented, and corrected as soon as possible. Corrective actions shall be taken to preclude recurrence. Corrective action reports shall be maintained as quality records.

1.10 PERSONNEL QUALIFICATIONS

A. Activities that require qualified production, inspection, and test personnel shall be identified and the minimum competence level shall be established. Personnel performing special processes (e.g., welding, brazing) or inspection/test tasks shall have the experience, training, and certification commensurate with the scope, complexity, or nature of the activity. Provisions shall be made for the following:

1. Requirements for qualifications
2. Orientation
3. Evaluation
4. Certification credential.

B. Records of personnel qualifications shall be maintained by the Contractor as quality records.

1.11 AUDITS

The Contractor shall perform scheduled self-audits to verify that his QC procedures ensure total compliance with the specifications and all reference standards. Records of self-audits shall be maintained as quality records and shall be made available to the Construction Manager upon request. Preplanned audits of the Contractor's, subcontractor's, and supplier's activities will be performed by the Construction Manager to verify compliance with the Specifications and all referenced standards. Audits will be performed on a systematic basis or as warranted by general quality trends. The Contractor shall provide access to the audit locations upon the Construction Manager's 24-hour notice.

1.12 SAMPLES

A. After contract award, the Contractor shall submit the specified samples to the Construction Manager for approval according to the Technical Specifications, Section 01300 and 01340. All items and materials will be approved by the Construction Manager prior to use on the Project. The Contractor shall verify, through appropriate inspections and tests, that the samples submitted meet the specifications and shall provide inspection and test data with the samples. The Construction Manager's review and comments shall not relieve the Contractor of his responsibility for completion of the Contract.

- B. One sample will be returned to the Contractor by the Construction Manager and will be stamped "ACCEPTED", "ACCEPTED AS NOTED", "REVISE AND RESUBMIT" or "NOT ACCEPTED", showing the reason for rejection. "REVISE AND RESUBMIT" samples shall be corrected and resubmitted by the Contractor in the same manner as the original sample submittal. The Contractor shall assure that the items/materials shall be available in quantities required to complete the Work, as no change or substitution will be permitted after a sample has been approved unless a change or substitution has been given in writing by the Contractor to the Construction Manager and the approval process is repeated.
- C. Samples will only be considered if taken at random. The Contractor shall permit representatives of the Construction Manager to witness the selection of samples. Inspection or tests of items or materials that fail shall be sufficient cause to terminate further inspections/tests of the same brand, make, or source of that product.
- D. A Schedule for Materials Quality Control Sampling and Testing is attached hereto.

This schedule presents the size of samples, frequency of testing and identifies who should perform the test, which the Contractor shall follow where the Technical Sections do not include such requirements. In case of differences between this schedule and the requirements of the Technical Sections (Divisions 2 through 16), the Technical Sections shall take precedence.

PART 2 - PRODUCTS

Not applicable to this section.

PART 3 - EXECUTION

3.1 REQUIREMENTS

- A. All materials required for the Contract shall be new except where specified otherwise. The Construction Manager may elect to perform additional inspections and/or tests at the place of the manufacture, the shipping point, or at the destination, to verify conformance to applicable specifications. Inspections and tests performed by the Construction Manager shall not relieve the Contractor from the responsibility to meet the specifications, nor shall such inspections/tests be considered to be a guarantee for acceptance of materials that will be delivered at a later time.
- B. Nonconforming materials, whether in place or not, will be rejected by the Construction Manager or his designee with written notification to the Contractor to correct or remove the defective materials from the Project. If the Contractor fails to respond, the Construction Manager may order correction, removal, and/or replacement of

defective materials by others, in which case the Contractor shall bear all costs incurred by such actions.

- C. Materials accepted on the basis of a Certificate of Compliance may be sampled and inspected/tested by the Construction Manager or its designee at any time. The fact that the materials were accepted on the basis of such certificate shall not relieve the Contractor of his responsibility to use materials which conform to the specifications.
- D. The Contractor shall impose upon his suppliers the same QC requirements, including inspection and test procedures, as imposed upon him by the specifications and referenced standards. The Contractor shall apply appropriate controls, designed to ensure that all materials supplied meet the requirements and specifications.

3.2 WARRANTIES AND GUARANTEES

See General Conditions, Section 19A through H.

END OF SECTION

**SCHEDULE FOR MATERIALS QUALITY CONTROL SAMPLING AND TESTING
TEST TYPES - SAMPLE SIZES - TEST FREQUENCY**

<u>Type Construction</u>	<u>Material</u>	<u>Test Types</u>	<u>Sample Size</u>	<u>Minimum Test Frequency</u>	<u>Test Perf By</u>
Portland Cement Concrete	Concrete	Slump ASTM C143.	150 pounds	First load and as determined by the CM. Six (6) cylinders per each 100 cubic yards or any part thereof.	CM
		PSI Strength ASTM C192 SSPWC 302-6	200 pounds		CM
		Proposed Mix Design	100 Pounds Cement 200 Pounds Sand 300 Pounds Coarse Aggregate 10 Gallons Water Representative Admixtures		Cont & CM
	Cores	Thickness.	4 inch diameter (full depth)	Two per each 2000 sq. yds.	CM
Curing Concrete	Compounds. Liquid.	% Solids. Moisture Loss.	One quart.	One per shipment. Certificate of Compliance.	Cont Cont
	Polyethylene Film (6 mils).	Tensile strength. Elongation. Moisture Loss.	One piece-full width, one foot long.	One per shipment. Certificate of Compliance.	Cont Cont

Abbreviations:

CM - Construction Manager
Contr. - Contractor.

Conformed Contract
LACTC

01453-8

Contract No. R01-T01-H0860
09.13.9

**SCHEDULE FOR MATERIALS QUALITY CONTROL SAMPLING AND TESTING
TEST TYPES - SAMPLE SIZES - TEST FREQUENCY**

<u>Type</u> <u>Construction</u>	<u>Material</u>	<u>Test Types</u>	<u>Sample Size</u>	<u>Minimum Test</u> <u>Frequency</u>	<u>Test</u> <u>Perf</u> <u>By</u>
Paint	All Colors & Types	SSPWC Section 210-1 Caltrans Section 59 SSPWC Section 310	One quart per color or as directed by the CM.	Approval by CM and Certificate of Compliance.	Cont
Epoxies	All types	AASHTO T-237	One unopened container.	Certificate of Compliance.	Cont

Abbreviations:

CM - Construction Manager

Contr. - Contractor

Conformed Contract
LACTC

01453-9

Contract No. R01-T01-H0860
09.13.9

SECTION 01505

MOBILIZATION

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the Worksite; for the establishment of other facilities necessary for work on the project; and for all other Work and operations which must be performed or costs incurred prior to beginning Work on the various contract items on the Worksite.

1.2 QUALITY ASSURANCE

The Construction Manager will have the right to reject construction tools, equipment, materials, and supplies which are, in its opinion, unsafe, improper, or inadequate. Bring rejected construction tools, equipment, materials, and supplies to acceptable condition or remove from Worksite.

1.3 SUBMITTALS

A. Refer to Section 01300, Submittals, for submittal procedures.

1.4 DELIVERY

Delivery to the Worksite of construction tools, equipment, materials, and supplies shall be accomplished in conformance with local governing regulations.

PART 2 - PRODUCTS

Provide construction tools, equipment, materials, and supplies of the type and quantities which will facilitate the timely execution of the Work and conform to the requirements of the California Administrative Code, the Los Angeles County Code, Los Angeles City Code, Compton City Code and Long Beach City Code.

PART 3 - EXECUTION

3.1 EXECUTION AND REMOVAL

A. Provide personnel, products, construction materials, equipment, tools, and supplies at the Worksite at the time they are scheduled to be installed or utilized.

B. Upon completion of the Work, remove construction tools, apparatus, equipment, unused materials and supplies, plant, and personnel from the jobsite.

END OF SECTION

Conformed Contract
LACTC

01505-2

Contract No. R01-T01-H0860
09.13.9

SECTION 01545

WORKSITE SAFETY REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of furnishing and utilizing safety equipment, furnishing, operating, and maintaining safety aids on the construction equipment. Compliance with the requirements of this Section shall not relieve the Contractor from other obligations imposed elsewhere in the Contract, by law and by regulation.

1.2 QUALITY ASSURANCE

A. Construction Equipment and Tools - Selection and operational parameters for construction equipment and tools shall meet the requirements of State and Federal OSHA and the requirement of the Construction Safety Manual; provided, however, that when different or conflicting standards are applied, the Contractor will follow the more stringent standard as determined by the Construction Manager.

1.3 SUBMITTALS

- A. Refer to Sections 01300, Submittals, and 01340, Shop Drawings, Product Data, and Samples, for submittal procedures.
- B. Submit safety program prior to beginning Work.

PART 2 - PRODUCTS

2.1 CONSTRUCTION AND SAFETY EQUIPMENT

Shall conform with the requirements of the California State and Federal Occupational Safety and Health Administration.

2.2 TESTING EQUIPMENT

Shall conform to the requirements the California Administrative Code (CAC), Title 8, Division of Industrial Safety, unless indicated otherwise.

PART 3 - EXECUTION

3.1 PERSONAL SAFETY EQUIPMENT

According to the requirements of CAL State and Federal OSHA and the Construction Safety Manual.

PART 4 - SAFETY AND HEALTH PERSONNEL

4.1 CLASS II SAFETY REPRESENTATIVE

- A. Provide a Class II Safety Representative, as defined in the Commission's Construction Safety Manual, who shall coordinate and supervise on site safety and health.
- B. The Safety Representative shall be present on site during the execution of all on site work.

PART 5 - IDENTIFICATION OF CONTRACTOR/SUBCONTRACTOR PERSONNEL

5.1 REQUIREMENTS

While performing Work at the jobsite, Contractor Personnel, of any tier, shall be identified with the Employee's Company name or logo affixed to either the Employee's hard hat, identification badge, or alternative method approved by the Construction Manager.

END OF SECTION

SECTION 01566

POLLUTION CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of minimizing noise, either minimizing or eliminating air pollution, and water pollution caused by the construction activities and controlling the generation and disposal of solid or hazardous wastes.

PART 2 - PRODUCTS

Products required for the Work shall meet the requirements of the Standard Specifications for Public Works Construction.

PART 3 - EXECUTION

3.1 NOISE CONTROL

- A. Conduct construction activities in such a manner that the noise levels measured at the closest point adjacent to the Worksite in normal use by the public do not exceed the limits shown in Tables 1 and 2.
- B. Conduct regular, periodic measurements of sound levels at the nearest receptors as mentioned above and maintain records of the measurements for inspection by the Construction Manager.
- C. Notwithstanding the specific noise level limitations specified herein, utilize the noise mitigation measures listed below in order to minimize, to the greatest extent feasible, the noise levels in the following areas:
 1. Inside Construction Limits
 - a. Use alternative procedures of construction and selection of the proper combination of techniques that shall generate the least overall noise and vibration. Such alternative procedures include, but are not limited to, the following:
 1. Using welding instead of riveting.
 2. Mix concrete offsite instead of onsite.
 - b. Use of construction equipment modified to dampen noise and/or vibration emissions, such as:
 1. Use electric instead of diesel-powered equipment.

2. Use hydraulic tools instead of pneumatic impact tools.
 3. Use effective intake and exhaust mufflers on internal combustion engines and compressors.
- c. Minimize noise-intrusive impacts during the most noise sensitive hours. Some of the key techniques used for this purpose could be as follows:
1. Plan noisier operations during times of highest ambient levels.
 2. Keep noise levels at relatively uniform levels; avoid peaks and impulse noises.
 3. Turn off idling equipment.
2. Outside Construction Limits
- a. The alternate procedures and techniques used in 3.1.C.1 above can be used outside construction limits such as staging areas. In addition use the following measures:
- D. Where more than one noise limit is applicable, use the more restrictive requirement for determining compliance.

3.2 VIBRATION CONTROL

The mitigation measures applied to limit noise levels will limit vibration levels also. The measures indicated in Part 3.1 are applicable. Vibration shall not exceed the limits as shown on Table 3.

3.3 AIR POLLUTION CONTROLS

- A. Criteria for Fugitive Dust - The detailed descriptions and explanations of specific impact mitigation measures are contained in the South Coast Air Quality Management District (SCAQMD) Rules and Regulations (Rules #402, "Nuisance" and #403, "Limitation of Fugitive Dust Emissions").
- B. In order to implement these regulations, Contractors shall use the following procedures and techniques:
1. Cover loads of materials, debris, and waste materials taken from construction sites.
- C. Burning of wastes is prohibited. Remove scrap and waste material and dispose of in accordance with laws, codes, regulation, ordinances, and permits.
- D. Use construction equipment which has been designed and equipped to prevent or control air pollution in conformance with the most restrictive regulations of the EPA, state and local authorities.

Evidence of such design and equipment will be maintained and made available for inspection by the Construction Manager.

- E. Establish and maintain records of the routine maintenance program for internal combustion engine powered vehicles and equipment used on the project. These records will be held available for inspection by the Construction Manager.

3.4 WATER POLLUTION CONTROLS

- A. Do not discharge pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, or other harmful wastes into or alongside rivers, streams, and impoundments, nor into channels leading thereto.
- B. Control the use of lubricating oils, hydraulic fluids, greases and other such products. Promptly clean up and properly dispose of materials contaminated by spillage or leakage of these products.

3.5 SOLID AND HAZARDOUS WASTE CONTROLS

This Section applies to solid waste and to hazardous waste. Solid waste is defined as all putrescible and nonputrescible solid, semisolid and liquid wastes, but does not include hazardous wastes as defined in Section 25117 of the Health and Safety Code, Division 20, Chapter 6.5. The Contractor is responsible for the safe disposal of all solid and hazardous waste and shall dispose of such waste in accordance with all applicable laws, regulations and ordinances.

- A. Waste Generation - Solid waste or hazardous waste may be generated by the actions of the Contractor, including but not limited to demolition, site preparation, grading, excavation, construction, and maintenance of equipment. Should material of a questionable nature be encountered during construction activities, immediately notify the Construction Manager.
- B. Disposal Regulations - Wastes may be disposed of in a number of ways, including reuse on the project, sale, for fuel, through controlled incineration, donation to other public-private projects and through dumping in approved public or private dump sites, either free or for a fee. The method of disposal is restricted according to the classification of the waste material by the California Hazardous Waste Control law. This law, which is found beginning in Section 25100, Chapter 6.5, Division 20 of the Health and Safety Code, should be followed for disposal of hazardous or extremely hazardous materials. The regulations of the waste disposal facility will also be followed. Additional definitions, lists and regulations are found in the California Administrative Code, Title 22, Division 4, Section 66000. these regulations govern the handling and transportation of hazardous materials and will be followed.
- C. Determination of Hazardous Nature - Some of the material generated by the project, especially tar or oil impregnated soil, may not obviously be hazardous. Physical and chemical analyses and tests may be required to determine if the material meets the criteria set forth in

Sections 66693 - 66723 (Article 11) of Chapter 30 "Minimum Standards for management of Hazardous and Extremely Hazardous Wastes," in Division 4, Title 22 of the California Administrative Code. The COMMISSION will pay for such chemical analyses and will coordinate with the Toxic Substances Control Division of the California Health Services Department to determine the quantity and origin of samples to be analyzed for any questionable material. The COMMISSION will obtain the classification of the material and provide it to the Contractor. The Contractor will furnish samples as directed.

- D. Disposal - Solid waste may be disposed of as mentioned in Part 3.5B above. Hazardous material will be disposed of in Class I or Class II-1 waste disposal facilities. Procedures to be followed may be found in the references mentioned in Part 3.5B.
- E. Haul Routes - The routes to be followed when transporting solid or hazardous wastes are subject to the approval of the local agency having jurisdictions.

END OF SECTION

TABLE 1
NOISE LEVEL LIMITS FOR CONSTRUCTION ACTIVITIES

LAND USE	CONTINUOUS ¹		INTERMITTENT ²		PEAK ³
	<u>Day⁴</u>	<u>Night⁵</u>	<u>Day⁴</u>	<u>Night⁵</u>	<u>Any Time</u>
RESIDENTIAL					
Land Use Categories 1 & 2	60 dBA	50 dBA	75 dBA	60 dBA	125 dB
Land Use Category 3	65	55	80	65	125
Land Use Categories 4 & 5	70	60	85	70	125
INSTITUTIONAL, PARK					
Land Use Categories 1 - 3	70	70	85	85	125
Land Use Categories 4 & 5	75	75	85	85	125
COMMERCIAL, RETAIL, OFFICE					
Land Use Categories 1 - 4	75	75	85	85	140
Land Use Category 5	80	80	85	85	140
INDUSTRIAL					
All Land Use Categories	85	85	90	90	140

Notes:

- 1 Continuous is defined as any noise continuing for more than 4 hours.
- 2 Intermittent is any noise that does not last for more than a few hours. This includes all nonstationary mobile equipment operated by a driver.
- 3 Peak impulsive sound level as measured with an impulse sound level meter. This can be approximated with a general purpose (Type 2) sound level meter as the maximum reading on the dBC scale, fast setting, plus 15 dB.
- 4 Daytime is defined as the period from 7:00 am to 10:00 pm local time except Sundays and legal holidays.
- 5 Nighttime refers to all other times including Sundays and legal holidays.
- 6 The general categories of land use adjacent to the Long Beach-Los Angeles Rail Transit Project are described in Table 4.

TABLE 2

NOISE EMISSION LIMITS ON CONSTRUCTION NOISE

<u>TYPE OF EQUIPMENT</u>	<u>MAXIMUM NOISE LIMIT</u>	
	<u>Date Equipment Acquired Before Jan. 1, '83</u>	<u>On or After Jan. 1, '83</u>
Equipment other than high- way trucks; including hand tools and heavy equipment	90 dBA	85 dBA
Highway trucks in any operating mode or location	83 dBA	80 dBA

NOTE: California Motor
Vehicle Law has been
relaxed. Highway trucks
purchased on or after
January 1, 1986 must meet
80 dBA maximum noise level.

TABLE 3
VIBRATION LIMITS FOR CONSTRUCTION ACTIVITIES

VIBRATION ANNOYANCE¹

<u>TYPE OF LAND USE</u>	<u>RMS VIBRATION VELOCITY LEVEL (in/sec)</u>
RESIDENTIAL AND INSTITUTIONAL	0.01
OFFICE AND COMMERCIAL	0.02
INDUSTRIAL	0.04

Notes:

¹ These criteria are intended to minimize community annoyance. They apply to any continuous or intermittent vibration and to repeated impulsive vibrations (e.g., pile driving). The limits apply to all vibration between the frequencies of 1 to 100 Hz.

TABLE 4
LAND USE CATEGORIES

<u>LAND USE</u>	<u>DESCRIPTION CATEGORY</u>
1	Low Density Residential: Residentially-zoned with typical lot size of 1/4 acre or greater. Typical background noise level (L90) of 40 to 45 dBA. The Long Beach - Los Angeles corridor has some low density residential land use at the Long Beach end of the mid-corridor segment.
2	Medium Density Residential: Predominantly single family residential with typical lot size less than 1/4 acre. Typical background noise (L90) level of 45 to 50 dBA. Most of the single family residential areas adjacent to the project fall into the medium density residential category.
3	High Density Residential: Multi-family residential land use such as apartment buildings, condominiums, and town houses. Most CBD residential areas would fall into this category.
4	Commercial/Office: Land zoned for commercial or office uses. Commercial and office activities have some noise and vibration sensitivity and any housing in the same area will have sensitivity to noise and vibration.
5	Industrial: Industrial areas have relatively little sensitivity to noise and vibration with the notable exception of vibration-sensitive processes such as manufacturing of integrated circuit wafers. Many of the industrial areas in the Long Beach - Los Angeles corridor have residual housing that will be sensitive to noise and vibration.

SECTION 01620

STORAGE AND PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of providing storage and protection of the materials, products, and supplies which are to be incorporated into the construction.

1.2 SUBMITTALS

- A. Refer to Sections 01300, Submittals, 01340, Shop Drawings, Product Data, and Samples, and 01342, Working Drawings, for submittal procedures.
- B. Submit descriptions of proposed methods and locations for storing and protecting products.

PART 2 - PRODUCTS

- 2.1 **MATERIALS** required for the storage and protection of the items specified shall be durable, weatherproof, and either factory finished or painted to present an appearance acceptable to the Construction Manager.

PART 3 - EXECUTION

- 3.1 **PALLETIZE** materials, products, and supplies which are to be incorporated into the construction and store off the ground only in those areas which are indicated as storage areas on the Contract Drawings and on the reviewed and accepted Working Drawings. Store these items in a manner which will prevent damage and which will facilitate inspection. Leave seals, tags, and labels intact and legible. Maintain access to products to allow inspection. Protect products which would be affected by adverse environmental conditions.

- A. Do not remove items from storage until they are to be incorporated into the Work.

3.2 STORAGE

Store items in a manner which will prevent damage to the owner's property. Do not store hydraulic fluids, gasoline, liquid petroleum, gases, explosives, diesel fuel, and other flammables.

3.3 LABELS

Storage cabinets and sheds which will contain flammable substances and explosive substances shall be labeled FLAMMABLE--KEEP FIRE AWAY and NO SMOKING with conspicuous lettering and conforming to CAL OSHA and FED OSHA requirements.

END OF SECTION

SECTION 01630

SUBSTITUTIONS

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of preparing, submitting, amending, and updating lists of products or methods of construction which the Contractor proposes to furnish and install in lieu of those indicated.

1.2 SUBMITTALS

- A. Refer to Sections 01300, Submittals, 01340, Shop Drawings, Product Data, and Samples, and 01342, Working Drawings, for submittal procedures.
- B. Submit documentation on materials, products, and supplies which are proposed for substitution in lieu of the terms shown on the Contract Drawings or in these Specifications.
- C. Submit documentation on the methods of construction which are proposed for substitution in lieu of the methods indicated or implied on the Contract Drawings or in these Specifications.
- D. Submit redesign, when required, for acceptance of substitution.

PART 2 - PRODUCTS

- 2.1 Proposals for substitutions.

PART 3 - EXECUTION

3.1 REQUEST FOR SUBSTITUTION

The list of materials, products, and supplies and the list of methods of construction for substitution of those indicated will be considered only if those requests have been submitted as set forth in Section 01300, Submittals. Acceptance of substitute items or methods will be only for characteristics and the use named in the acceptance. This acceptance will not be interpreted as a modification of the Specifications or Contract Drawings, nor to establish acceptance of products and methods for other portions of the COMMISSION's Rail Transit Project. Acceptance of a substitution does not relieve the Contractor of the responsibility of fulfilling the requirements of the Contract Documents. The Construction Manager will be the sole judge of quality and suitability of substitute items or methods and its decision is final subject to the approval of the Contracting Officer. If the use of substitute products or methods involved redesign of other parts of the Work, the cost required to effect

that redesign will be charged to Contractor. Perform the redesign and submit for acceptance by the Construction Manager. The direct cost of evaluating substitutions by the Construction Manager will also be borne by the Contractor.

A. Include with the documentation for materials, products, and supplies the following information:

1. Complete data substantiating compliance of proposed substitution with requirements of the Contract Drawings and Specifications.
2. Identification of materials, products, or supplies including manufacturer's name, catalog name and number, and the manufacturer's address.
3. Installation characteristics, installation drawings, and manufacturer's literature including product description, performance and test data, and reference standards if pertinent.
4. Name and address of projects on which product was used under similar circumstances, and date of installation.
5. Itemized comparison of proposed substitution with the item specified. Include differences in materials, size, finish, estimated life, estimated maintenance, availability of spare parts and repair services, and manufacturer's warranties.
6. Effect of change on Construction Schedule.
7. Accurate cost data for proposed substitution in comparison with product specified.
8. Equitable adjustment and credit Contractor proposes to offer the COMMISSION.
9. When applicable or requested by the Construction Manager, provide off-the-shelf samples of the specified item and the proposed substitution.

B. Certify the following when making request for substitution:

1. The Contractor has personally investigated the proposed item and believes it to be equivalent, or superior, to that shown or specified; and that he will update information as new or different data becomes known to him.
2. The Contractor will furnish the same guarantee for the substitution as he would for product specified.
3. The Contractor will coordinate installation of accepted substitution into the Work, and will make those changes, subject to approval by the Construction Manager, required for the Work to be complete in all respects.

4. The Contractor waives all claim for additional costs related to the substitution.
 5. Cost data are complete, including related costs, except the costs of the Engineer's redesign or Construction Manager's review of the Contractor Design.
- C. Substitutions indicated or implied on Shop Drawings or product data submittal will not be considered unless a request for substitution has been submitted in conformance with this Section.
- D. Include in the documentation for construction methods the following information:
1. Detailed description of proposed method.
 2. Working Drawings illustrating methods.
 3. Itemized comparison of proposed substitute methods with the methods shown, with product implied or specified. Include differences in estimated time for execution, labor, materials, revisions to construction process, and cost.

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of maintaining a clean, orderly, hazard-free Worksite and final cleaning for COMMISSION's occupancy. Failure to maintain Worksite will be grounds for withholding monthly payments until corrected to the satisfaction of the Construction Manager.

1.2 JOB CONDITIONS

A. Safety Requirements

Maintain the Worksite neat, orderly, and hazard-free until final acceptance of the Work in conformance with the local governmental and CAL OSHA and FED OSHA requirements. Keep Worksite walks, public sidewalks, roadways, and streets, along with public and private walkways adjacent to Worksite, free from hazards caused by construction activities. Inspect those facilities regularly for hazardous conditions caused by construction activities.

B. Hazards Control

1. Store volatile wastes in covered metal containers, and remove those wastes from Worksite daily.
2. Do not accumulate wastes which create hazardous conditions.
3. Hazard controls shall conform to the applicable federal, state and local rules and regulations.

C. Access

Maintain the Worksite in such a way as to permit access by other COMMISSION contractors.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

Utilize the type of cleaning materials recommended by the manufacturer of the surfaces to be cleaned.

PART 3 - EXECUTION

3.1 INTERIM CLEANING

- A. Maintain structures, grounds, railroads and other areas of Worksite, including public and private properties immediately adjacent to Worksite, free from accumulations of waste materials caused by construction operations. Place waste materials in metal containers.
- B. Promptly empty waste containers when they become full and legally dispose of the contents at dumping areas off the COMMISSION's property.
- C. Control the handling of waste materials. Do not permit materials to be dropped or thrown from structures.
- D. Clean only when dust and other contaminants will not precipitate upon newly painted surfaces.

3.2 FINAL CLEANING

- A. Inspect surfaces, in preparation for substantial completion and occupancy.
 - 1. Remove dirt, dust, litter, corrosion, solvents, discursive paint, stains, and extraneous markings.
 - 2. Wash and polish metal and plastic surfaces.
 - 3. Remove surplus materials.
 - 4. Remove tools and equipment used in the construction except that for the Construction Manager's property.
 - 5. Remove detachable labels and tags. File them with the manufacturer's specifications for that specific material for the COMMISSION's records.
 - 6. Repair damaged materials to the specified finish or remove and replace.

END OF SECTION

SECTION 01720

CONTRACT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of maintaining, marking, recording and submitting of Contract record documents.

1.2 SUBMITTALS

A. At completion of this Contract, deliver record documents to the Construction Manager, with transmittal letter, in duplicate, containing the following:

1. Date.
2. Project title and numbers.
3. Contractor's name and address.
4. Title and number of each record document.
5. Certification that each document as submitted is complete and accurate.
6. Signature of the Contractor or his authorized representative.

B. Change orders.

C. Shop Drawings, diagrams, illustrations, schedules, charts, brochures and other like data.

D. Warranties, Guarantees and Bonds.

1.3 QUALITY ASSURANCE

Record documents shall be prepared to a high standard of quality, such as that set forth in MIL-STD-100, ANSI Standard Drafting Manual Y14 or other relevant lower tier specification defining equal drafting quality for microfilming.

PART 2 - PRODUCTS

Products are not used in this Section.

PART 3 - EXECUTION

3.1. MAINTENANCE OF DOCUMENTS

Maintain at field office, one copy of each of the following:

A. Contract Document

1. Contract Drawings.
2. Contract Specifications.
3. Reference Specifications.
4. Affirmative Action and Labor Compliance Manual.
5. Insurance Specification and Information Manual.
6. Construction Safety Manual.
7. One set of reproducible drawings to record the following:
 - a. Field changes of dimension and detail including as built elevation and location (station and offset).
 - b. Details not on original Contract Drawings.

3.2 RECORDING

- A. Label each document "PROJECT RECORD" in two-inch-high printed letters.
- B. Keep record documents current.
- C. Legibly mark reproducible copies of the Contract Drawings to record actual construction.
- D. Legibly mark up each Section of Specifications to record:
 1. Manufacturer, trade name, catalog number, and supplier of each product and item actually installed.
 2. Changes made by Change Orders

3.3 DOCUMENT MAINTENANCE

- A. Provide files and racks for storage of documents to maintain in clean, dry and legible condition.
- B. Do not use record documents for construction purposes.

- C. Make documents available for inspection by the COMMISSION, Construction Manager, Engineer, Architect and any local agency having jurisdiction.

END OF SECTION

SECTION 01730

MAINTENANCE DATA

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of preparing and submitting maintenance data for installed products.

1.2 SUBMITTALS

- A. Refer to Section 01300, Submittals, for submittal procedures.
- B. Submit proposed Maintenance Data format including a table of contents not less than 90 days prior to acceptance tests and final inspection.
- C. Submit completed Maintenance Data Manual in final form 30 days prior to acceptance tests and final inspection.
- D. Submit six copies of Maintenance Data Manual within ten days after acceptance tests and final inspection.

1.3 CONTINUOUS UPDATING PROGRAM

Furnish one copy of letter indicating that suppliers have been notified to provide updated maintenance data, service bulletins, and other information pertinent to the products, as it becomes available.

PART 2 - PRODUCTS

2.1 SIZE

8 1/2 inches by 11 inches

2.2 PAPER

White bond, at least 20-pound weight

2.3 TEXT

Printed or typewritten

2.4 PRINTED DATA

Manufacturer's catalog cuts, brochures, maintenance data. Clear reproductions thereof will be acceptable.

2.5 DRAWINGS

8 1/2 inches by 11 inches, bound in with text. Larger drawings are acceptable, provided they are folded to fit into a pocket inside the rear cover of the manual. Reinforce edges of large drawings.

2.6 PRINTS OF DRAWINGS

Black on white, sharp in detail and suitable for making reproductions.

2.7 FLYSHEETS

Separate each portion of the manual with colored, neatly prepared flysheets briefly describing contents of the ensuing portion.

2.8 COVERS

Provide 40 to 50 mil, clear plastic, front and back covers for each manual.

2.9 BINDINGS

Conceal the binding mechanism inside the manual; 3-ring binders will be acceptable. Binding is subject to the Construction Manager's approval.

PART 3 - EXECUTION

3.1 GENERAL

Assemble maintenance manual using manufacturer's latest standard commercial data.

3.2 Include the following information on the cover and on inside cover sheet:

MAINTENANCE INSTRUCTIONS

(TITLE OF FACILITY)

(TITLE AND NUMBER OF CONTRACT)

(ADDRESS)

(City, State)

(General subject of this Manual)

(Space for signature of the Construction Manager acceptance date)

3.3 CONTENTS OF THE MANUAL

- A. An index of all volumes in each volume of multiple volume systems.
- B. An index in and for each volume.
- C. Name, address, and telephone numbers of Contractor, suppliers, and installers.
- D. Name, address, and telephone numbers of manufacturer's nearest representatives.
- E. Name, address and telephone number of nearest parts vendor and agency.
- F. Copy of guaranties and warranties issued to, and executed in the name of, the COMMISSION.
- G. Anticipated date COMMISSION assumes responsibility for maintenance.
- H. Description of component parts.
- I. Accepted test data.
- J. Maintenance schedules and procedures.
- K. One copy of each accepted Shop Drawing.
- L. Manufacturer's parts list with catalog names, numbers and illustrations.
- M. List of manufacturer's recommended spare parts, price and quantities.
- N. List of special tools required for the maintenance, and repair of the components.
- O. Scale and corrosion control procedures.
- P. Dismantling and reassembly instructions.
- Q. Ordering information.

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of preparing and submitting warranties and bonds required by these Specifications.

1.2 SUBMITTALS

- A. Refer to Section 01300, Submittals, for submittal procedures.
- B. Submit blank warranties and bonds for acceptance of form.
- C. Submit executed warranties and bonds.

PART 2 - PRODUCTS

Products are not required for this Section.

PART 3 - EXECUTION

3.1 WARRANTIES

- A. Execute the warranties and bonds required by these Specifications in the form accepted by the Construction Manager.
- B. Provide warranties or bonds for the materials, labor and time period set forth in the Sections of these Specifications requiring such documents.

END OF SECTION

SECTION 01750

SPARE PARTS AND REPLACEMENT MATERIALS

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of packaging, shipping, delivering, and unloading spare parts and replacement materials.

PART 2 - PRODUCTS

2.1 Products are as defined in Section 01730, Maintenance Data, and the replacement materials as indicated, including but not limited to:

Paints and Coatings 5 gallons, each type and color

Sign Type 7-1	(System Map)	10%
Sign Type 7-2	(Neighborhood Map)	5%
Sign Type 8-1	(Tickets)	5%
Sign Type 14-1	(Handicap)	10%
Sign Type 14.1-1	(Emergency Phone)	10%
Sign Type 14-4	(Phone)	10%
Sign Type 15-1	(Emergency Exit Only)	10%
Sign Type 22-1	(Kiss & Ride)	10%
Sign Type 22-2	(Handicap)	10%
Sign Type 23-	(City Trail Blazer)	20%
Sign Type 24-	(Freeway Trail Blazer)	5%
Sign Type 43-42	(No Smoking)	10%
Sign Type 43-	(Room I.D.)	15%
Sign Type 46-	(Office I.D.)	15%
Sign Type 47-	(Engineering Control Number)	10%
Sign Type 50-1	(Mile Marker-L1)	10%
Sign Type 50-2	(Mile Marker-L2)	10%
Sign Type 58-1	(No Trespassing)	10%
Sign Type 58-2	(Watch for Trains)	10%
Sign Type 58-3	(Danger High Voltage)	10%

PART 3 - EXECUTION

3.1 PACKAGING

Package and label spare parts and replacement materials in moisture-proof containers suitable for shipment and storage. Attach copies of shipping list in the package and to the exterior of the package.

3.2 SHIPPING

Ship spare parts and materials as directed by the Construction Manager.

3.3 DELIVERY

Deliver spare parts and materials not later than the date of Final Acceptance.

3.4 UNLOADING

Unload the spare parts and materials in a manner which will prevent damage to the packages and the contents. The Construction Manager will open the packages and inspect spare parts and materials for damage. Damaged parts and materials will be returned to the Contractor to be replaced with undamaged parts and materials, at no additional expense to the COMMISSION.

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of designing, furnishing materials for, fabricating, erecting, and removing formwork for cast-in-place concrete.

1.2 GENERAL REQUIREMENTS

A. Criteria for Design of Formwork

1. Unless otherwise indicated design, construct, erect, maintain, and remove forms and related structures for concrete work in accordance with ACI 347 and Subsections 303-1.3 through 303-1.5 of the Standards Specifications for Public Works Construction (SSPWC) 1985 Edition.
2. Formwork surface materials - Use material which will produce surfaces within the allowable tolerances specified in Section 03300, Cast-In-Place Concrete.
3. Special sections - Provide offsets, keyways, recesses, rustication strips, anchorages, and other features. Select special materials which will ensure indicated finishes.
4. Removal features - Design formwork to be readily removable without impact, shock, and damage to concrete surfaces and adjacent materials.

1.3 SUBMITTALS

- ###### A. Refer to Sections 01300, Submittals; 01340, Shop Drawings, Product Data, and Samples; for submittal procedures.
1. Detailed Shop Drawings describing shop fabricated forms and support members.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber

1. In accordance with the Standard Specifications for Public Works Construction (SSPWC) 1985 Edition.

B. Steel

1. Sheet - Commercial Grade steel, 3/16 inch minimum thickness, or other smooth faced material may be used to form concrete exposed to public view.

C. Form Lining

1. Fiberglass Reinforced Plastic - Moisture-resistant sheet comprised of 25 percent fiberglass embedded in polyester resin gelcoat and coated, on sides which will contact concrete, with alkali-resistant gelcoat formulated for use with concrete.

2. Fiberglass Laminated Plywood - APA, FRP, 5/8 inch thick with fiberglass facing and back laminations.

D. Leakage Control Materials - Capable of producing flush, water-tight and nonabsorbent surfaces and joints. Seal form edges by such means as gasketing material or sealant placed in the joint in such a way that neither a fin nor groove is made in the face of the cast concrete.

1. Caulking compound - GE-silicone Products Div. "Series 1200 Construction Caulking," Dow Corning Co.s "781 Caulking" or accepted equal.

2. Tapes - Preco Industries "Seam-Strip," United Mineral and Chemical Co. "Tesa Formstik Tape Number 720," a form film tape of polypropylene plastic treated with waterproof adhesive for joint conditions not exposed to public view.

E. Form Release Agent - Commercial formulation form-coating compounds which will neither bond with, stain, nor adversely affect concrete surfaces, and which will neither impair subsequent treatment of concrete surfaces requiring bond or adhesion nor impede wetting of surfaces which will be cured with water or curing compounds.

F. Plugged Cone Form Ties - Rod type, with ends or end fasteners which can be removed without spalling the concrete and which leave a hole so that concrete cover will be equal in depth to the required reinforcement clearance. Form ties shall be of a design in which the hole left by the removed end or end fastener is easily filled to match the surface of the hardened concrete.

G. Inserts - Galvanized cast or welded steel, complete with anchors to concrete and fittings such as bolts, wedges, and straps.

H. Chamfer Strips - 3/4 inch by 3/4 inch (or size as indicated on the drawings) triangular fillets milled from clear, straight-grain pine, surfaced each side, or extruded vinyl type with or without nailing flange.

- I. Miscellaneous Joint Strips - Preformed strips for reveals, rustications, and similar joints fabricated of wood, metal, or plastic.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect surfaces if in proper conditions to receive formwork.
- B. Secure shoring and bracing against settlement and displacement.

3.2 CONSTRUCTION

- A. Construct formwork in accordance with the accepted Shop Drawings, and in a manner which will produce finished concrete surfaces conforming to indicated design and within allowable tolerances.
 1. Make joints and seams mortar-tight. Install leakage control materials in accordance with the manufacturer's printed instructions, and in a manner which will maintain a smooth continuity of plane between abutting form panels and resist displacement by concreting operations.
 2. Kerf wood inserts for forming keyways, reglets, and recesses in a manner which will prevent swelling and ensure ease of removal.
 3. Maintain forms clean and free from indentations and warpage.
 4. Support joints with extra studs or girts, and in a manner which will ensure true, square intersections.
 5. Assemble forms in a manner which will facilitate their removal without damage to the concrete.
 6. Construct molding shapes, recesses, and projections with smooth finish materials and install in forms with sealed joints.
- B. Cylindrical Columns and Supports
 1. Form round-section members with pre-formed steel tubes. Use tube walls of that thickness which will resist loads, imposed by wet concrete, without deforming.
- C. Corner Treatment - Form chamfers with 3/4 inch on each leg, unless otherwise indicated, and accurately shape and surface in a manner which will produce uniformly straight lines and edge joints which will prevent mortar runs. Extend terminal edges to limits, and miter chamfer strips at changes in direction.

3.3 EMBEDDED ITEMS

- A. Install anchor bolts, sleeves, metal ties, and other fastening devices required for attachment of other Work. Secure products in position before beginning concrete placement.

3.4 FORM RELEASE AGENT

- A. Coat form contact surfaces with acceptable form release agent before reinforcement is placed. Do not allow excess form release agent material to accumulate in the forms or to come into contact with surfaces which are required to be bonded to fresh concrete such as concrete reinforcement and embedded items. Apply form release agent in compliance with manufacturer's instructions.
- B. Coat steel forms with non-staining, rust-preventive form release agent or otherwise protect against rusting. Do not use rust-stained steel surfaces for forms in contact with concrete.
- C. Apply release agent to bolts and rods that are to be completely removed or that are to be free to move.

3.5 REMOVAL OF FORMS

- A. Maintain formwork in place for the following structural condition until the concrete has attained the minimum percentage of indicated design compressive strength or for the period of time specified in the following table:

STRUCTURAL MEMBER OR CONDITION	NORMAL STRENGTH CONCRETE	NORMAL HIGH EARLY STRENGTH CONCRETE	MINIMUM COMPRESSIVE STRENGTH FOR FORM REMOVAL (PERCENT OF REQUIRED DESIGN STRENGTH)
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Free standing walls, column and piers	2 days	1 day	50
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- B. Remove forms by methods which will neither injure concrete surfaces, overstress concrete members, nor distort formwork. Do not pry against concrete. Leave surfaces clean and unblemished.

3.7 FIELD QUALITY CONTROL

- A. Before placing concrete, check lines and levels of erected formwork and positioning of embedded inserts, chamfers, keyways and joints for correctness. Make corrections and adjustments to ensure proper

size and location of concrete members and stability of forming systems.

- B. While placing concrete, ensure that formwork and related supports have not been displaced, that joints are preventing loss of cement paste, and that completed Work will be within specified tolerances.
- C. Prior to placing any concrete, the Contractor shall sign-off on Concrete Placement form as required by Section 03300, Cast-in-Place Concrete.

3.8 DETECTION OF MOVEMENT

Use means such as plumb lines, telltales and survey equipment, as required by Construction Manager, to detect movement of formwork during concrete placement.

3.9 RE-USE OF FORMS - Refer to Section 03347, Exposed Finish Concrete.

- A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, and otherwise damaged and deteriorated form facing material will not be acceptable; remove that material from worksite. Renew form facing as specified for new formwork.
- B. Align and secure joints in a manner which will preclude offsets. Do not use "patched" forms for exposed concrete surfaces.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of furnishing, fabricating, and installing reinforcing steel for concrete structures.

1.2 GENERAL REQUIREMENTS

- A. Provide personnel experienced in installation of reinforcing bars for concrete.
- B. Allowable Fabrication Tolerances - In accordance with the "Manual of Standard Practice" of the Concrete Reinforcing Steel Institute (CRSI), Chapter 7.
- C. Allowable Construction Tolerances - In accordance with the "Manual of Standard Practice" of the Concrete Reinforcing Steel Institute, Chapter 8.
- D. Reference Standards
 - 1. Standard Specifications for Public Works Construction (SSPWC) 1985 Edition Subsections 201-2 and 303-1.7.
 - 2. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice.
 - 3. American Welding Society (AWS) - D1.4 Structural Welding Code-Reinforcing Steel.
 - 4. Recommended Practice for Placing Bar Supports (CRSI Manual).

1.3 SUBMITTALS

- A. Refer to Sections 01300, Submittals, and 01340, Shop Drawings, Product Data, and Samples, for submittal procedures.
- B. Submit manufacturer's specifications and installation instructions for proprietary materials and reinforcement accessories.
- C. Submit Shop Drawings for fabrication, bending and placement of concrete reinforcement in conformance with ACI 315 and showing bar schedules, stirrup spacing, diagrams of bent bars, arrangements and assemblies, as required for fabrication and placement of concrete reinforcement.

D. Submit certified copy of mill reports to include steel sources, heat number, and indicating chemical and physical analysis for each heat. The copy shall accompany each shipment of reinforcing steel.

E. Submit welder certification in accordance with AWS D1.1.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Ship concrete reinforcement from source in bundles of one size and length, securely tied and identified with plastic tag indicating grade and size of bar, melt or heat number, bundle number, and name and location of mill. Deliver bars to the Worksite properly identified in accordance with accepted Shop Drawings.

B. Store concrete reinforcement off ground and support as required to prevent formation of kinks, distortions, excessive rusting, contamination by oil, mud, and other material that will damage bars or adversely affect bond with concrete.

PART 2 - PRODUCTS

2.1 REINFORCEMENT MATERIALS

A. Reinforcing Steel Bars - ASTM A615.

B. Metal Accessories

1. Where concrete surfaces will be exposed to public view, use supports with plastic coated or stainless steel legs.
2. For all other concrete use standard products as recommended by CRSI Manual.

2.2 CORROSION CONTROL

A. Thermite Welding Materials - Either ERICO Products, Inc. "Caldwell Process", or Continental Industries, Inc. "Thermoweld Process". Materials used conforming with the manufacturer's recommendations regarding the mold size and shape, charge size and alloy mixture for the powder.

2.3 GALVANIZING

In accordance with ASTM A123; average weight of 2.3 ounces per square foot of actual surface

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify that surface is clean and in proper condition for installing reinforcement.
- B. Verify that items to be embedded and block outs are secured in place.

3.2 PREPARATION

Reinforcement steel shall be free of rust encrustment, and mill scale, dirt, oil, grease, and other materials which reduce or destroy bond with concrete.

3.3 INSTALLATION

- A. Arrange and place reinforcement as indicated on the approved Shop Drawings and within tolerances.
- B. Secure reinforcement against displacement during placement of concrete.
- C. Wire or clip bars together at all intersections.
- D. Use spacers which will not be visible in exposed finish.

3.4 BAR AND SUPPORTS AND SPACERS

- A. Support reinforcing bars in position by means of accepted spacers, chairs or hangers.
- B. Install sufficient number of supports to prevent displacement of reinforcement from indicated position. Do not place reinforcing bars more than two inches beyond the last leg of any continuous bar support.
- C. Do not use stones, brick, wood blocks, and pieces of broken concrete to support reinforcing steel.

3.5 SPLICING

- A. Locate splices only as indicated.
- B. Where splices are permitted, they may be made in the following manner:
 - 1. Tied lap splices shall be in accordance with requirements of ACI 318.

3.6 FIELD QUALITY CONTROL

- A. Welding - Tests may be made by the Construction Manager for reinforcing bar welds, as follows:
1. Visual inspection of reinforcing bar welds.
 2. Two tensile tests of sample welds made by each welder on the largest bar indicated. If testing reveals defective weld, the Contractor shall pay cost of testing.
- B. Where a weld is determined by the Construction Manager to be defective, repair or replace defective weld to the satisfaction of the Construction Manager.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of placing, preliminary finishing, and curing cast-in-place concrete of this Contract.

1.2 QUALITY ASSURANCE

A. Qualifications of Concreting Supervisor: Experience in placing, consolidating, and curing Portland Cement Concrete in structures similar to those in this Contract, and shall have been in responsible charge of that Work.

B. Reference Standards - Requirements of Regulatory Agencies: Work shall be performed in accordance with ACI 318 and ACI 301.

1. For tests use ASTM Standards listed in Section 1.4 of ACI 301.

2. American Concrete Institute (ACI)

ACI - 304 Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.

ACI - 305 Hot Weather Concreting.

ACI - 309 Practice for Consolidation of Concrete.

3. American Society for Testing and Materials (ASTM)

a. Refer to ACI Manual of Concrete Practice of 1984 for ASTM references.

b. C173, Test Method Air Content of Freshly Mixed Concrete by the Volumetric Method.

c. C172, Method of Sampling Freshly Mixed Concrete.

4. Federal Specifications (FS)

a. HH-I-521, Insulation Blankets, Thermal (Mineral Fiber for Ambient Temperature).

b. MMM-G-650, Grout Adhesive, Epoxy Resin, Filled.

5. U.S. Military Specification (MIL) - MIL-D-19235, Chemical Bonding Agent for Concrete.

- C. Refer to Section 03301, Portland Cement Concrete for mix design criteria.
- D. Construction Tolerances - Allowable Deviations from indicated Dimensions and Elevations on the drawings - Do not allow adjacent units to have cumulative deviations.
 - 1. Concrete Substrate Surfaces
 - a. Variation from indicated elevation: +/-1/4 inches.
 - b. Variation from indicated elevation on sloped surface: +/-1/4 inch.
 - 2. Variation from a ten-foot straightedge placed in all directions on horizontal and inclined surfaces: 1/8 inch.
 - 3. Top elevation of pylons, bulkheads: +/-1/4 inch.
 - 4. Flatness of finished horizontal surfaces: Eliminate depressions which could hold water.
 - 5. Out-of-plumb of pylons, bulkheads, vertical joints and grooves, lines exposed to view in public areas of finished structure: 1/4 inch in 20 feet, not to exceed 1/2 inch total.
 - 6. Level and grades of horizontal grooves, and other conspicuous lines: 1/4 inch in 20 feet, not to exceed 1/2 inch in entire line.
 - 7. Cross sectional dimensions of pylons and bulkheads: Plus 1/4 inch, minus zero.

1.3 SUBMITTALS

- A. Refer to Sections 01300, Submittals, and 01340, Shop Drawings, Product Data, and Samples, for submittal procedures.
- B. Submit for approval manufacturer's literature describing the following, as applicable:
 - 1. Form ties
 - 2. Form releasing agent
 - 3. Joint material
 - 4. Bonding agent
 - 5. Admixtures
 - 6. Curing compound
- C. Submit following in accordance with Section 01342, Shop Drawings, for each concrete placement operation:
 - 1. Detailed descriptions of intended equipment and methods for conveying, placing, consolidating, preliminary finishing, and curing concrete.

2. Trial Concrete Mix Designs - In accordance with Section 03301, Portland Cement Concrete.
3. Submit ready-mix delivery tickets in accordance with ASTM C94.
4. Detailed description of intended means of protecting fresh concrete from extremes of temperature and inclement weather.
5. Location and scheduled date of concrete placement, intended rate of placing, and mix design designation with updates.
6. Composite working drawings, indicating locations and sizes of inserts, anchor bolts, recesses, and construction joints in coordination with Section 03100, Concrete Formwork.
7. Special concrete placement and compaction procedures.

D. Certification

1. Submit Certificates of Compliance for the following:
 - a. Curing compound
 - b. Bonding agent
 - c. Cure and sealer or sealer/hardener
 - d. Joint sealant
 - e. Caulking compound.
2. Submit the manufacturer's certification that materials meet or exceed Specification requirements.
3. The Construction Manager shall provide a concrete placement form to each concrete placement on which the Contractor shall be required to signoff on each activity.

- E. Tests - Submit required test data in accordance with Section 01453, Quality Control Requirements.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Transport and deliver concrete in accordance with ASTM C94.
- B. Arrange and maintain delivery schedules so that once placement has begun no delay of more than 30 minutes will occur between fresh deposits and previously placed deposits.
- C. Handle, store and batch concrete materials in a manner that will ensure that materials are not contaminated, damp, unclean, segregated or affected in any way that will damage the final product.

1.5 JOB CONDITIONS

A. Environmental Requirements - Hot Weather Concreting

1. Maximum temperature in hot weather - as recommended in ACI 305.
 - a. Do not allow the temperature of the concrete when deposited to exceed 90 degrees F during hot weather and provide a lower temperature as stipulated by the Construction Manager. Submit the methods proposed for controlling the temperature of the concrete to the Construction Manager for acceptance.
 - b. Protect the concrete from direct sunlight. Keep the forms moist by means of cool water sprinkling, the application of wet burlap or cotton mats, or other approved method which will not adversely affect the concrete.
 - c. Hot weather conditions will be deemed to exist when the temperature in the forms is 85 degrees F or above. If concrete would otherwise become warmer than 85 degrees F, pre-cool the mixing water and/or aggregates.
2. Wet Weather - Do not place concrete in locations exposed to weather if rain intensity is expected to be sufficient to wash cement paste off aggregate, unless adequate shelter for concrete has been provided.

B. Inspection-Immediately Before Concreting.

1. Substrate Surface Condition
 - a. Verify that bearing capacity of subgrade is satisfactory and that surface is hard, reasonably level, slightly moist, and free from loose, and saturated material and debris.
 - b. Verify that previously-placed concrete has been prepared for bonding as specified in Paragraph 3.1.G, and is free from loose and extraneous matter.
2. Products to be Embedded
 - a. Inspect anchorage devices, remove defective pieces and install new pieces, and correct improper positioning, omission, and weaknesses in fastenings against displacement.
3. Formwork - Inspect formwork for defects in alignment, grade, leakage and integrity of bracing, tie-bolts, and joints; eliminate defects.
4. Concrete Reinforcement - Inspect reinforcement for quantity, sizes, and positioning. Verify that fastenings will prevent displacement.

5. Do not place concrete until inspection has been completed and defects have been eliminated.

PART 2 - PRODUCTS

2.1 PORTLAND CEMENT CONCRETE

As specified in Section 03301, Portland Cement Concrete.

- A. Class 3000 - All concrete

2.2 CHEMICAL BONDING AGENTS

Film-forming compound suitable for brush or spray application conforming to MIL-D-19235.

2.3 CURING MATERIALS

- A. Burlap - Double thickness conforming to AASHTO M-182, Class 3.
- B. Waterproof paper - Conform to ASTM C171.
- C. White burlap-polyethylene sheeting - Conform to ASTM C171.
- D. Membrane forming curing compound - Conform to ASTM C309, Types 1 or 2 as selected by the Construction Manager. Certify that curing agent will not affect bond of subsequent finishes.
 1. Type 1 compound containing a fugitive dye that is readily distinguished upon the concrete surface and that will become inconspicuous within seven days after application.
 2. Type 2 compound containing a white pigment that when applied to the surface exhibits a reflectance of not less than 60 percent of that of magnesium oxide, to be used where surfaces are subjected to sunlight.

2.6 MORTAR FOR PATCHING CONCRETE

One part Portland cement of type and manufacture used in impinged concrete to two parts fine aggregate conforming to ASTM C33.

2.7 AGENT FOR BONDING NEW CONCRETE TO HARDENED CONCRETE - Either grout or epoxy resin.

- A. Grout - equal parts of Portland cement and fine aggregate by weight and not more than six gallons of water per sack of cement.
- B. Epoxy resin - Two-component, mineral-filled, epoxy-polysulphide polymer conforming to FS MMM-G-650, Type I or Type II, Grade A.

2.8 JOINT SEALANT

One of the following ASTM D1190, ASTM D1850.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Ensure that equipment has been cleaned before allowing fresh concrete to be placed in it.
- B. Provide ready-mixed concrete in accordance with ASTM C94.
- C. Immediately prior to placing concrete, make certain that the required volume of concrete will be delivered in such manner as to permit placement at a constant rate. Use equipment in conveying concrete that has no aluminum component in direct contact with the concrete.
- D. Immediately prior to placing concrete, check forms, falsework and centering and make adjustments to assure that the finished Work will conform to the indicated lines and grades. To permit ready measurement by the Construction Manager to determine settlement or deviation from Contract Drawings requirements provide plumb lines and tell-tales.
- E. Do not place concrete until formwork, reinforcing steel, and embedded items have been checked and appropriate placement clearance form has been signed by the Construction Manager.
- F. Uncoated Wood Forms - Thoroughly wet forms immediately before placing concrete.
- G. Bonding New Concrete to Hardened Concrete
 1. Roughen surfaces to set concrete at joints; except if bonding will be with concrete bonding agent; remove laitance, coatings, loose particles, and foreign matter; and uniformly expose aggregate.
 2. Bond fresh concrete to new concrete which has set, but has not fully cured, as follows:
 - a. At joints between footings and walls or columns, damped with water, but do not saturate, roughen and clean concrete surfaces immediately before placing fresh concrete.
 - b. At joints in exposed Work, vertical joints in walls, damped with grout, but do not saturate, roughened and clean concrete surfaces. Apply epoxy resin to dry surfaces.
 1. Apply grout with a stiff broom or brush to a thickness of not less than 1/16 inch. Deposit fresh concrete before grout has attained its initial set.

2. Or apply epoxy resin to cleaned concrete surfaces in accordance with resin manufacturer's printed instructions.
3. Bond fresh concrete to fully-cured concrete as follows:
 - a. Mix epoxy-resin bonding agent in accordance with manufacturer's printed instructions and safety precautions.
 - b. Thoroughly roughen and clean hardened concrete surfaces by sandblasting and wash thoroughly prior to applying a coat of epoxy-resin bonding agent not thinner than 1/16 inch on the damp surface. Place fresh concrete while epoxy-resin is tacky, without abrading the in-place coating, and in accordance with epoxy-resin bonding agent manufacturer's printed instructions.

3.2 CONVEYING OR PUMPING CONCRETE

- A. Conveying - Provide equipment for conveying concrete from the mixer such as to ensure a continuous flow of concrete to the point of placement without segregation or loss of mortar, as acceptable to the Construction Manager. Provide ferrous metal surfaces of metal chutes, troughs, and pipes in contact with concrete during conveying or pumping of concrete.
- B. Belt Conveyors - Slope belt conveyors so they will not cause segregation or loss of mortar. Provide an approved arrangement at the discharge end of the conveyor to prevent segregation. Discharge long conveyor runs of concrete into a hopper, without segregation, before it is deposited in the forms.
- C. Provide metal or metal-lined chutes and open troughs, where steep slopes are required. Equip the chutes or troughs with baffles to minimize segregation of the aggregates. Keep chutes or open troughs clean of hardened concrete by thoroughly flushing with water after each use. Discharge water used for cleaning outside of the line of the structure. Provide chutes or open troughs having a slope not exceeding one foot vertical in two feet horizontal and not less than one foot vertical to three feet horizontal. Discharge chutes 20 feet or more in length into a hopper before final distribution.
- D. Adjustable Length Pipes (Elephant Trunks)
 1. The use of flexible pipes of metal, rubber or plastic will be permitted provided they are of six-inch minimum diameter and used in a manner that will not allow segregation of the concrete.
 2. Locate pipe and flexible pipe so that the concrete is delivered in a continuous flow to points not more than five feet horizontally and five feet vertically from its final location. In the vicinity of expansion and contraction joints, reduce the horizontal distance to a maximum of three feet.

3. Clean flexible pipes or elephant trunks after each usage.

E. Pumping

1. Provide suitable pumping and pneumatic conveying equipment sized to adequately handle the volumes of concrete to be conveyed. Control pneumatic equipment so that there is no segregation in the discharged concrete. Operate the pump or pneumatic equipment such that a continuous stream of concrete without air pockets is produced. Position the discharge end of the line as near the final position of the concrete as possible but in no case more than five feet. Position discharge lines horizontal, inclined upwards or vertical from the machine. After each operation and at the conclusion of placement, thoroughly clean equipment, and waste debris and flushing water outside of forms.
2. Equipment
 - a. Furnish, install, operate, and maintain equipment in accordance with the accepted working drawings and the recommendations of ACI 304.
 - b. Maintain spare equipment on site to minimize delay should equipment breakdown occur.
3. Preparations
 - a. Before charging pipe line, operate pump and verify that moving parts will operate satisfactorily.
 - b. Pump Portland cement grout through line immediately ahead of concrete. Unless pumped grout will be for bedding at construction joints, transport pumped grout off worksite.
4. Field Quality Control
 - a. Sample pumped - Notify the Construction Manager seven calendar days prior to any activity that will require sampling and testing of concrete. Reconfirm this intention of placing activity again 48 hours before operation. Contractor shall cooperate and assist as required in sampling and furnishing samples to the Construction Manager.
5. Clean-Up
 - a. At the end of a pumping operation, purge line from placement area to pumping area with water. Dump waste concrete in a container and remove it from worksite.
 - b. Immediately after line has been purged, thoroughly clean lines and pumping system equipment.

3.3 JOINTS

Make construction joints as indicated unless otherwise proposed by the Contractor and approved by the Construction Manager. Make joints on concrete structure and joints forming knockout panels as indicated. Extend no reinforcement through the expansion and contraction joints, except where specifically noted or detailed on the plans.

- A. Where keyways are as indicated by beveled strips or boards.
- B. Continue reinforcing steel across construction joints.
- C. Provide rough surface with aggregate exposed (1/4" min.), and thoroughly cleaned by wet sandblasting, by cutting with high pressure water jet having a minimum pressure of 2,000 psi, or by equivalent methods, to the satisfaction of the Construction Manager. The cleaning shall be done after concrete has hardened sufficiently to prevent raveling of the surface below the desired depth.
- D. Immediately after the Work of placing concrete is halted, remove accumulations of mortar splashed upon the reinforcement and surfaces of the forms before the concrete takes its initial set. Take care when cleaning reinforcing steel to prevent damage to or breakage of the concrete-steel bond.
- E. Mix epoxy-resin bonding agent as recommended by the manufacturer.
- F. Before fresh concrete is placed, coat the hardened surface of previously placed concrete with not less than 1/16 inch thickness of bonding agent or as recommended by bonding agent manufacturer.
- G. Place fresh concrete while the bonding agent is tacky, exercising care not to remove the bonding agent, and as recommended by the bonding agent manufacturer.

3.4 PLACING CONCRETE

- A. Depositing
 - 1. Deposit concrete continuously and as rapidly as practicable after mixing.
 - 2. Use of vibrators for shifting the mass of fresh concrete is not permitted.
 - 3. Do not deposit concrete at a rate such as to endanger the formwork or at a rate faster than the placing crew can compact it properly. Do not deposit concrete on concrete which has hardened sufficiently to cause the formation of seams (cold joints) or planes of weakness within the section. Cover each layer of concrete with fresh concrete within a period not to exceed 30 minutes.

4. Deposit the concrete in a continuous flow to points not more than five feet horizontally and five feet vertically from its final location.
 5. Remove temporary spreaders in forms when the concrete has reached an elevation rendering their service unnecessary.
 6. Place column concrete through adjustable length flexible pipes or "elephant trunks."
- B. Where a schedule for placing concrete is indicated, no deviations will be permitted therefrom unless acceptable to the Construction Manager. Placing will not be permitted when the sun, heat, wind, or limitations of facilities furnished by the Contractor, prevent proper finishing and curing of the concrete.
- C. Deposit concrete as near as possible to final position, and in a continuous flow. Do not allow mortar to separate from aggregate. Do not use vibrators to move concrete. If concrete must be dropped more than four feet, drop concrete through adjustable length pipe or flexible tube.
- D. Deposit concrete against leading face of lift being placed.
- E. Deposit concrete continuously in level layers of that thickness which can be properly consolidated; cover previously-placed layers before concrete has begun to harden. Cover each layer with fresh concrete within 30 minutes. Start placing at the low point and proceed up grade unless otherwise permitted by the Construction Manager.
- F. No additional mixing water shall be incorporated into the concrete during hauling or after arrival at the delivery point, unless authorized by the Construction Manager. If the Construction Manager authorizes additional water to be incorporated into the concrete, the drum shall be revolved not less than 30 revolutions at mixing speed after the water is added and before discharge is commenced.

The rate of discharge of mixed concrete from truck mixer-agitators shall be controlled by the speed of rotation of the drum in the discharge direction with the discharge gate fully open.

When a truck mixer or agitator is used for transporting concrete to the delivery point, discharge shall be completed within 1 1/2 hours, or before 250 revolutions of the drum or blades, whichever comes first, after the introduction of the cement to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85 degrees F., or above, a time less than 1 1/2 hours may be required.

When non-agitating hauling equipment is used for transporting concrete to the delivery point, discharge shall be completed within one hour after the addition of the cement to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85 degrees F., or above, the time

between the introduction of cement to the aggregates and discharge shall not exceed 45 minutes.

Each load of ready-mixed concrete delivered at the jobsite shall be accompanied by a ticket showing volume of concrete, the weight of cement in pounds and the total weight of all ingredients in pounds, unless otherwise directed by the Construction Manager. The ticket shall also show the time of day at which the materials were batched and for transit-mixed concrete, the reading of the revolution counter at the time the truck mixer is charged.

- G. Construct construction joints.
- H. Thoroughly clean concrete handling equipment immediately on suspension of its use.
- I. Remove cement paste and debris from reinforcement to which additional reinforcement will be attached.
- J. Concrete shall be placed and consolidated by methods that will not cause segregation of the aggregates and will result in a dense homogenous concrete which is free of voids and rock pockets. All concrete shall be placed while fresh and before it has taken an initial set. Retempering any partially hardened concrete with additional water will not be permitted.

Forms and subgrade shall be thoroughly moistened with water immediately before placing concrete.

Concrete shall be placed as nearly as possible in its final position and the use of vibrators for extensive shifting of the mass of fresh concrete will not be permitted. Fresh concrete shall not be permitted to fall from a height greater than 4 feet without the use of adjustable-length pipes or tubes placed to prevent segregation of the concrete.

All concrete shall be consolidated by means of high frequency internal vibrators within 15 minutes after it is deposited in the forms. The vibrators shall not be attached to or held against the forms or the reinforcing steel. The vibrating shall be done with care and in such a manner that displacement of reinforcement and inserts is avoided.

When concrete is inaccessible for adequate consolidation by other means, external vibrators shall be used and the forms shall be sufficiently rigid to resist displacement or damage.

3.5 CONSOLIDATING CONCRETE

- A. Consolidate concrete during placement until voids have been filled and free mortar appears on surface.

B. Compaction

1. As concrete is being placed, compact it thoroughly and uniformly by means of mechanical vibration in order to secure a dense mass, close bond with reinforcement, and a smooth surface. Work the concrete well around the reinforcement, embedded items and into the corners of forms.
2. Use internal vibration unless the use of external vibrators for compacting is specifically requested by the Construction Manager when the concrete is inaccessible for adequate consolidation. When external vibration is required, the forms are to be constructed sufficiently rigid to resist displacements and damage from vibrations.
3. Provide vibrators capable of generating vibration at frequencies of not less than 10,000 impulses per minute. Check vibrators and assure good condition before starting the placement of concrete. Provide a sufficient number of vibrators to properly compact each batch of concrete immediately after it is deposited in the forms. Determine the size of the vibrators by the space available for their use in the forms between the reinforcing bars. Make available at least one spare vibrator, for each size in good working condition, at the site of the pour for use in case of emergency.
4. Use external vibrators of the size, type and operation acceptable to the Construction Manager.
5. Operate vibrators by experienced workers in accordance with ACI 309. Provide location, manner and duration of the application such as to secure maximum consolidation of the concrete without causing segregation of mortar and coarse aggregate. Vibrate the deposited concrete in such a manner as to prevent damage to forms, damage or displacement of reinforcement and embedded materials or segregation in the concrete. Make every effort to avoid formation of laitance and the accumulation of excessive water on the surface of the concrete as it is deposited. Remove excessive water accumulating, by pumping, bailing or other methods satisfactory to the Construction Manager before other concrete is placed. Do not penetrate previously placed layers more than two inches in order to consolidate the layers and prevent over vibration of the previously vibrated layer.
6. When spading, thoroughly compact the coarse aggregate away from the form and into the plastic mass. Do spading with approved equipment and rod the concrete around embedded materials, and into the corners and spaces to be filled in order to secure even, dense surface, free from aggregate pockets or honeycomb.

- C. Vibrate concrete only for that time which is necessary to obtain maximum consolidation without segregating mortar and coarse aggregate, and without causing water and cement paste to flush to surface.

- D. Space the points of vibrator insertion at 1 1/2 times the radius of action recommended by ACI 309, Table 5.1.4 for the particular application.
- E. Penetrate previously-placed layer of fresh concrete two inches at regular intervals.

3.6 FINISHES

A. Unformed Surfaces

- 1. Before beginning preliminary finishing operation, verify that supports and headers have been set to required elevation with allowances for settlement, camber, and deflection in accordance with Section 03100, Concrete Formwork.
- 2. Consolidate concrete with a compacting type screed operated on and between support or headers, until a uniform surface has been obtained.
- 3. Tamp and strike-off concrete with templates and strike boards alternatively; remove templates and boards in a combined longitudinal and transverse motion.
- 4. Leave a uniform film of mortar of suitable consistency on the concrete surface after last pass of template and strikeboard.

B. Formed Surface - Immediately following form removal:

- 1. Remove fins and irregular projections from surfaces which are exposed to view.
- 2. Fill holes vacated by removable components of form ties with mortar of same type mix and ingredients as in surrounding concrete.
- 3. Prepare pointing mortar not more than 30 minutes before using.
- 4. Maintain mortar patches wet and cure as specified in Paragraph 3.7.
- 5. Leave contraction and articulated joints tooled and free from mortar and concrete.
- 6. Leave joint filler, having clean and true edges, exposed for its full length.

- C. Form concrete surfaces which will be exposed to public view in completed structures by fiberglass, or by large continuous panels or other approved materials that will produce a smooth surface without fins or other projections.

1. When forms are removed do not repair voids, stone pockets, and other defects until the Construction Manager has inspected them and given remedial instructions.
2. Round edges and joints to a 1/4 inch radius, after finishing unless indicated otherwise.
3. Finish concrete surfaces as specified in Section 03347, Exposed Finish Concrete, unless otherwise indicated.

3.7 CURING

A. Protect freshly deposited concrete from excessively hot or cold temperatures, in accordance with Paragraph 1.5, and maintain without drying for the period of time necessary for the hydration of the cement and the proper hardening of the concrete. Provide material for the curing and protection of the concrete at the site and ready for use before actual placement of concrete is started.

1. Provide, and use when necessary, sufficient tarpaulins or other approved material to cover completely, or enclose forms and working areas during placing and finishing operations.
2. Except as otherwise specified herein, keep newly placed concrete continuously wet for a cumulative period of seven days (three days for high-early strength) at an air temperature above 50 degrees F.
3. Cure concrete by normal curing methods as set forth herein under Normal Curing and Protection, except as otherwise permitted by the Construction Manager.
4. Provide clean and potable water for use in curing concrete.
5. Keep steel forms, exposed to the sun, and wood forms in contact with concrete wet during the curing period. If forms are removed during the curing period, employ one of the following curing materials or methods immediately and continue for the remainder of the curing period.

B. Normal Curing and Protection

1. Moist curing of concrete by one of the methods specified below, as selected by Contractor:
 - a. Continuous sprinkling with a nozzle or nozzles which, during the first 24 hours, atomizes the flow of water, providing a mist and not a spray. Do not apply the moisture under pressure directly upon the concrete and do not allow water to flow or wash the surface and cause erosion.
 - b. By covering the entire surface of the concrete with burlap or an absorptive mat or fabric laid directly on the concrete and kept wet at all times.

- c. By sprinkling, as set forth above, for at least 18 hours and then immediately covering the concrete surface with waterproof paper or plastic sheeting, free from holes or tears and at all times held in position in such manner that the entire surface of the concrete being cured is fully covered.
 2. When using burlap or cotton mats for curing concrete, exercise care to avoid damage to, or the marring of, the concrete surfaces.
- C. Membrane-Forming Curing Compound may be authorized by the Construction Manager under certain circumstances where the application of moisture is impracticable and where such compounds will not jeopardize the appearance of the concrete. Apply compounds, where authorized, uniformly over the surface at the thickness recommended by the manufacturer.

1. Do not apply these compounds to surfaces where a bond is required for additional concrete.
2. Warm curing compound that has become chilled to such a degree that it is too viscous for satisfactory application in accordance with the manufacturer's recommendations. Should the film of the compound be damaged before the expiration of the curing period, repair the damaged portions immediately with additional compound.
3. Give surfaces the required surface finish prior to application of the curing compounds. Provide concrete, cured by this method, applications of the curing compound as recommended by the manufacturer for the desired effect. Apply immediately after stripping of forms and acceptance of the concrete finish. If the surface is dry, wet the concrete with water and apply the curing compound just as the surface film of water disappears. Apply the second coat, if required, after the first application has set. During curing operations wet unsprayed surfaces with water. Protect the coating against marring for a period of at least five days after application.

Should the surface coating be subjected to disturbance, the Construction Manager may require that water curing be applied at once. If the use of a curing compound results in a streaked or blotchy appearance, stop the method and perform water curing, as herein before specified, until the cause of the defective appearance is corrected.

4. Uniformly apply compound over surface at thicknesses recommended by compound manufacturer.
 - a. Surfaces exposed to sunlight; apply pigmented type.
 - b. Surfaces protected from sunlight; apply clear type.

3.8 PROTECTION OF COMPLETED WORK

- A. During the curing period, protect concrete from damage mechanical disturbances, water flow, loading, shock, and vibration.
- B. Protect concrete from physical damage or visual defects until the Work is accepted by the Construction Manager.

3.9 REPAIR

The Construction Manager will determine extent and manner of action to be taken to repair defective concrete revealed by surface defects or otherwise. Fill holes extending through concrete, with plunger-type gun or other suitable device, from the least exposed face; hold a flush stop at exposed face.

A. Repair of Formed Surfaces

- 1. Patch defective areas with cement mortar of mix proportions and materials identical to those used in surrounding concrete. Before starting to patch, produce a finish on patch which is indistinguishable from finish on surrounding concrete, immediately after removing forms and in a manner and by a method accepted by Construction Manager in writing.
- 2. Patch surfaces indicated to receive abrasive blasted finish or other type of exposed aggregate finish with a patching mortar which contains cement and coarse aggregate of type embodied in surrounding concrete, and in proportions identical to those in surrounding concrete.
- 3. Cut-out honeycomb, rock pockets, and voids having a diameter more than 1/2 inch to solid concrete but not shallower than one inch. Make edges of cuts perpendicular to exposed concrete surface. Before placing cement mortar, thoroughly clean, dampen, and brush neat cement grout area to be patched.

B. The Construction Manager may require defective work to be removed and replaced.

- 1. Sample concrete in place that is deemed defective by drilling and test in accordance with the requirements of ASTM C42. The coring operation will be monitored by the Construction Manager.
- 2. If any such core specimen shows a compressive strength less than the specified strength, the Construction Manager will have the right to require, at his discretion, either replacement or strengthening of the defective portion of the structure.
- 3. Concrete will also be considered defective if it is structurally unsound, not watertight, or improperly finished, as determined by the Construction Manager. The Construction Manager, at his discretion shall have the right to require replacement, strengthening or correction of the defective portion of the

structure. Strengthening or correction of the defective portion of the structure shall be at no additional cost to the COMMISSION.

4. When directed by the Construction Manager remove defective concrete, roughen or key the surface and soak with water before patching with concrete or mortar of a color to match the surrounding concrete. White cement may be added to the patching material to produce the same color as the original concrete. Clean, saturate with water and point with a mortar paste consisting of cement and fine aggregate mixed in generally the same proportions to give the same appearance as the concrete being finished. The cavities produced by form ties, and other holes, honeycomb spots, broken corners or edges and other defects shall be filled with mortar. Mortar to be used in pointing shall be prepared not more than 30 minutes prior to use. Properly cure the mortar patches. Contraction and articulated joints in the completed Work shall be left carefully tooled and free of mortar and concrete. Joint filler, where required, shall be left exposed for its full length with clean and true edges.

3.10 DAMAGED WORK

Before final acceptance of the Work, repair damaged surfaces, corners of concrete, and concrete finish, whether such damage has resulted from the action of the elements or from any cause whatsoever. Bring damaged places where surface repairs are permitted to a smooth, dense, watertight condition to the satisfaction of the Construction Manager.

3.11 FIELD QUALITY CONTROL

Refer to Subsection 306-4.7 of Standard Specifications for Public Works Constructions, 1985 Edition.

END OF SECTION

SECTION 03301

PORTLAND CEMENT CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Work specified in this Section consists of furnishing and maintaining equipment at the worksite; developing and controlling concrete mix design; controlling storage and quality of concrete ingredients; and batching, mixing, controlling quality, furnishing, and delivering cast-in-place concrete of indicated strength and water-cement ratio designation having indicated slump and sized aggregate, in accordance with ASTM C94.

B. DEFINITIONS

1. Strength Designation - The nominal compressive strength required of concrete is indicated by the word "class" followed by a four digit number which expresses the nominal compressive strength, in pounds per square inch, of test specimens at 28 days when prepared in accordance with ASTM C31 and tested in accordance with ASTM C39.
2. The word, "concrete," followed only by a strength class designation (e.g., Concrete Class 4000) indicates normal weight aggregate concrete, i.e., concrete having a unit weight of approximately 144 pounds per cubic foot not including the reinforcement.

1.2 QUALITY ASSURANCE

A. Concrete Supplier - Purchase concrete from a plant which has recently furnished the specified concrete for incorporation in a COMMISSION project or furnish evidence of the plant's capacity to produce and deliver concrete conforming to the specified requirements at the required rate and which has laboratory capability to develop acceptable concrete mix designs and to control quality of concrete production.

B. Mix Design Criteria

1. Design mixes to produce concrete having workability, durability, strength, maximum density, minimum shrinkage and permeability in accordance with these Specifications.
2. Develop the proportioning of concrete ingredients, using maximum size of coarse aggregate in accordance with ACI 211.1, recommended practice for selecting proportions for normal and heavyweight concrete.

3. For durability purposes, use a water-cement ratio in accordance with either ACI Standard 211.1, Table 5.3.4(a) and Table 5.3.4(b) by the compressive strength requirement for non-air-entrained and air-entrained concrete; and by the type of structure and exposure conditions, or 0.40 by weight whichever is less.
 4. Workability - Use approved chemical, mineral, or air-entraining admixtures or suitable combinations thereof, to improve workability, and to reduce water and cement contents, minimize shrinkage and permeability of concrete, provided that these admixtures do not adversely affect other required properties of concrete.
 5. Strength
 - a. Design concrete mix for the specified strength based on the required overdesign factor of 1.24 according to ASTM C94, and assuming a coefficient of variation equal to 15. Design each class of concrete so that not more than ten percent of the strength test will have values less than the specified strength, and the average of any three consecutive strength tests will be equal to or greater than the specified strength.
 - b. Nominal compressive strength of concrete
 - 1) Class 3000
 - a) For all work of this Contract.
 6. Adjustments of mix designs - For every change in source and type of ingredient and class of concrete.
 7. Proportions of the ingredients of the approved mix shall not be altered without the written approval of the Construction Manager.
 8. Soluble chloride ion tests shall be performed in accordance with ASTM D512 on all concrete mixes. Soluble chloride ion content shall not exceed 250 ppm (0.15% by weight of cement).
- C. Concrete Pump Plant Design Criteria - Conform to recommendations of ACI 304. Concrete shall be delivered to the pump in a synchronized delivery system whereby there will be no delays longer than 20 minutes between concrete loads.
- D. Source Quality Control
1. Provide concrete from an approved, automated batching plant meeting the following requirements:

a. Arrangement

1. Separate bins or compartments for individual sizes of aggregates, bulk Portland cement, and flyash shall be provided.
2. Compartments shall be constructed so materials will be separated in the stockpile areas and in the batching bins. Automatic batching apparatus shall be maintained to give accurate measurements of batch materials. Water shall be measured by weight or volume. Interlock batching operations shall be required to meet the standards of the Concrete Plant Manufacturer's Bureau.
3. Plant facilities shall provide ease of procuring samples from all bins or compartments.
4. Batching accomplished in accordance with ASTM C685 may be used subject to acceptance by the Construction Manager in lieu of weight batching, provided batching plant is approved to comply with requirements of Standards of the Concrete Plant Manufacturer's Bureau.

b. Water Batcher and Dispensers for Admixtures

1. Provide equipment for batching water and air-entraining or other admixtures at the batching plant.
2. Provide a suitable water measuring device that is capable of measuring the mixing water within the specified requirements for each batch. Provide a mechanism for delivering water to the mixers such that leakage will not occur when the valves are closed. Interlock the filling and discharge valves for the weighing batcher so the discharge valve cannot be opened before the filling valve is fully closed.
3. Provide measuring devices for admixtures capable of ready adjustment to permit varying the quantity of admixture to be batched that has at least three percent accuracy. Interlock the dispenser for admixtures with the batching and discharging operations so the batching and discharging of the admixture will be automatic.

- c. Moisture Control - Provide a plant capable of ready adjustment to compensate for the varying moisture contents of the aggregate and to change the weights accordingly of the materials being batched. Provide an electric moisture meter acceptable to the Construction Manager for measurement of moisture in the fine aggregate and calibrate it as often as required. Do not exceed eight percent moisture content of the fine aggregate. Arrange the sensing element so the measurement is made near the batcher charging gate of the sand bin or in the sand batcher.

d. Scales - Provide adequate facilities for the accurate measurement and control of each of the materials entering each batch of concrete. Conform to the applicable requirements of National Bureau of Standards, Handbook 44, "Specifications, Tolerances and Other Technical Requirements for Commercial Weighing and Measuring Devices," for the accuracy of the weighing equipment. Provide each weighing unit with a visual springless dial which will indicate the scale load at all stages of the weighing operation or include a beam scale with a beam balance indicator which will show the scale in balance at load and at any beam setting. Provide an indicator having an over and under travel equal to at least five of the capacity of the beam. Provide standard test weights and any other auxiliary equipment for checking the operating performance of each scale or other measuring device. Make periodic tests in the presence of the Construction Manager in a manner and at intervals as directed. Upon completion of each check test, the concrete supplier shall make such adjustments, repairs or replacements as required to secure satisfactory performance.

e. Recorders

1. Provide an accurate graphical or digital printout record of the scale readings after each of the aggregates, water, cement and admixtures, if any, including zero initial readings have been batched prior to delivery to the mixer using an accurate recorder or recorders.
2. House each recorder in a locked, dust-tight cabinet.
3. Clearly indicate the different types of mixes used by stamped letters, numerals, colored ink or other suitable means on the charts or tapes that variations in batch weights of each type of mix can be readily observed.
 - a. Show on the charts or tapes, date and time of day (stamped or preprinted) at intervals of not more than 15 minutes.
 - b. Provide recorders of a type that prints the required information in duplicate. One copy of the recorded batch weights for each load shall accompany each delivery ticket as supplied by the producer. Verify that the identification number is identical to that of the concrete delivery ticket. Deliver one copy with its corresponding concrete ticket to the Construction Manager at the time and site of concrete placement.
4. Place the recorders in a position convenient for observation by the plant operator and the Construction Manager.

- f. Protect weighing, indicating and control equipment against exposure to dust and weather and insulate against vibration or movement caused by operating equipment in the plant.

E. Equipment - Conforming to the requirements of ASTM C94.

F. Reference Standards

1. American Concrete Institute (ACI)

- a. 211.1, Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
- b. 318, Building Code Requirements for Reinforced Concrete.

2. American Society for Testing and Materials (ASTM)

- a. C31, Method of Making and Curing Concrete Test Specimens in the Field.
- b. C33, Spec. for Concrete Aggregates.
- c. C39, Test Methods Compressive Strength of Cylindrical Concrete Specimens.
- d. C94, Spec for Ready-mixed Concrete.
- e. C138, Cement Content.
- f. C143, Test Method for Slump of Portland Cement Concrete.
- g. C150, Spec. for Portland Cement.
- h. C157, Shrinkage Tests.
- i. C173, Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- j. C177, Test Method for Steady-state Thermal Transmission Properties by Means of the Guarded Hot Plate Method.
- k. C231, Air Content of Freshly Mixed Concrete by the Pressure Method.
- l. C260, Spec. for Air-entraining Admixtures for Concrete.
- m. C470, Spec. for Molds for Forming Concrete Test Cylinders Vertically.
- n. C494, Spec. for Chemical Admixtures for Concrete.
- o. C618, Spec. for Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete.

- p. D75 Standard Practice for Sampling Aggregates.
- q. D512, Tests for chloride Ion in Water and Wastewater.
- r. E-1, Spec. for ASTM Thermometers

1.3 SUBMITTALS

- A. Refer to Sections 01300, Submittals, and 01340, Shop Drawings, Product Data, and Samples, for submittal procedures.
- B. Mix design for each concrete class and for each change of ingredients and ingredient sources; including admixtures.
- C. Methods for cold and hot weather mixing. Use methods capable of producing concrete with a temperature not more than 90 degrees F or less than 55 degrees F at the time of placement. Refer to ACI 305 for Hot Weather Concreting.
- D. Certificates of Compliance by the Concrete Supplier
 - 1. Ingredients
 - a. Submit the mix design laboratory test reports and mill or manufacturer's certificate attesting the conformance of ingredients with these Specifications. Use ingredients in the design mix which are representative samples of the materials to be used in the Work. Provide one design mix.
 - b. Certificates by the concrete supplier of design mixes to specified requirements in respect to strength, unit weight, maximum size aggregate, air-entrainment, slump, and water-cement ratio.
 - c. If source, brand or characteristic properties of the ingredients need to be varied during the term of the Contract, submit to the Construction Manager revised laboratory mix reports or representative samples of materials to be used in conformance with these Specifications.
- E. Copy of recorder printout with its corresponding concrete delivery ticket.
- F. Samples - Submit the following:
 - 1. 100 pounds of:
 - a. Coarse Aggregate
 - b. Fine Aggregate
 - c. Cement (94 pounds)

2. One bag of each dry admixture used (10 pounds min.)

3. One gallon of each liquid admixture used.

G. Batch Tickets - Provide a certification or delivery tickets in accordance with ASTM 94 from the concrete supplier with each batch delivered to the site listing the following information in addition to the ASTM C94 requirements. Submit each certificate to the Construction Manager before unloading at the site:

a. Name of supplier

b. Name of batching plant and location

c. Serial number of ticket

d. Date

e. Truck number

f. Specific job designation (contract number and location)

g. The volume of concrete in cubic yards

h. Specific class and type of concrete, in conformance with the specification requirement

i. Time loaded and amount of water added

j. Type and brand of cement

k. Weight of cement

l. Maximum size of aggregates

m. Weights of coarse and fine aggregates, respectively

n. Type and amount of admixtures

o. Certification that the mix complies with the approved laboratory design mix

p. Mix design designation.

q. Meter reading from revolution counter at time of batch and discharge.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver packaged materials in manufacturer's original, unopened containers bearing manufacturer's name and brand.

B. Load, transport, handle, store and batch concrete materials in a manner that will ensure that materials are not contaminated, unclean, segregated or affected in any way that will damage the final finish.

C. Aggregates

1. Transport and stockpile aggregates separately according to their sources and gradations. Handle aggregates in a manner which will prevent segregation and loss of fines or contamination with earth or foreign materials.
2. If aggregates show segregation and do not meet gradation requirements, rescreen the aggregates before placing in the proportioning bins or discard.
3. Do not use aggregates from different sources or of different gradations alternately. Aggregates may be mixed only to obtain consistent gradations.
4. Do not transfer aggregates directly from trucks or railroad cars to the proportioning bins. Stockpile aggregates until the excess moisture drains off and/or applying additional moisture to maintain the aggregate in a fully saturated surface wet state.

D. Packaged Cement

1. Deliver packaged cement to the mixing site in original sealed packages labeled with the weight, name of the manufacturer, brand and type specified.
2. Store the package on raised platforms in a manner to protect them from moisture or contamination (in water-tight enclosures).
3. Do not use cement which has been reclaimed by cleaning bags.
4. Do not use cement which has been damaged by exposure or overstocking.
5. Do not use any packages varying more than three percent from the specified weight.
6. Packaged cement will be subject to test at any time.
7. Do not store packaged cement over six months.
8. Use packaged cement on the basis of first received, first used.
9. Do not pile bags more than eight (8) feet high.

E. Bulk Cement

1. Store bulk cement separately from other cement and protect it to prevent deterioration from exposure to moisture and intrusion of foreign matter.

2. Provide facilities in the ready-mix plant to maintain separation of cement meeting the requirements of these Specifications from other types of cement.
3. Provide facilities in cement manufacturer's plant for sampling of cement at the weighing hopper or in the feed line immediately before entering the hopper.
4. Different brands of cement, or the same brand of cement from different sources, shall not be used without approval by the Construction Manager.

F. Store admixtures to prevent contamination, evaporation or damage. Protect liquid admixtures from harmful temperature ranges.

1.5 TRANSPORTATION

Verify that each transit mix truck used for delivery of concrete to worksite has been satisfactorily inspected by the Construction Manager as evidenced by his placing a Construction Manager seal thereon. Seals on transit mix trucks will indicate that truck is acceptable in accordance with Sections 9 and 10 of ASTM C94. The Construction Manager may remove seals from transit mix truck if it determines that condition of the truck, its mixing equipment, discharge mechanism, or other components are not conducive to the maintenance of the concrete transported therein; do not use that vehicle again on a COMMISSION contract until resealed by the Construction Manager.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portland Cement - Type II, unless otherwise indicated, in accordance with the requirements of Caltrans, Standard Specifications, Section 90-2.01.
- B. Aggregates - In accordance with the requirements of Caltrans, Standard Specifications, Section 90-2.02 and as follows for class 3000, 4000, and 5000 concrete.
 1. Wash aggregate with potable water.
 2. Test aggregate for soluble chloride ion content in accordance with ASTM D512. Maximum soluble chloride ion content shall be 250 ppm.
- C. Water - In accordance with the requirements of Caltrans, Standard Specifications, Section 90-2.03 modified as follows for Class 3000, 4000, and 5000 concrete.
 1. Potable water shall be used for mixing and wash water. Wash water shall not be recycled for use as mix water.

2.2 ADMIXTURES

In accordance with the requirements of Caltrans, Standard Specifications, Section 90-2.04.

2.3 EQUIPMENT

- A. Standard slump cone and tamping rod specified in ASTM C143.
- B. Pressure Air Meter conforming to ASTM C231. Chace air indicator kit conforming to AASHTO-T-199, for determining air content of freshly-mixed concrete.
- C. Thermometer registering in a range between 36.5 degrees F and 107.5 degrees F conforming to ASTM E1 thermometer number 33F.
- D. Storage box for simultaneously curing 30 test specimens strategically placed at selected areas. Maintain temperature of cylinders between 68 degrees F and 75 degrees F and prevent loss of moisture. Equip storage box with a lock and a maximum-minimum "Hi-Lo" thermometer acceptable to the Construction Manager. Deliver three (3) keys to the Construction Manager.
- E. Sufficient cylinder molds (6" x 12), conforming to ASTM C470 for casting test specimens in accordance with ASTM C31 shall be made for each 100 cubic yards or fraction thereof, for each class of concrete.

PART 3 - EXECUTION

3.1 MATERIAL PREPARATION - Mixing Concrete

A. Proportioning

In accordance with the requirements of Caltrans, Standard Specifications, Section 90-5.

B. Mixing and Transporting

In accordance with the requirements of Caltrans, Standard Specifications, Section 90-6.

3.2 INSPECTION

- A. Verify that aggregates from different sources are not mixed, except as required to satisfy the accepted mix design.
- B. Verify that mix designs and sources of aggregates are not changed without written acceptance by Construction Manager.
- C. Verify that aggregate mixtures have not become segregated.

- D. The Contractor shall test all concrete mixes on a monthly basis for soluble chloride ions in the hardened concrete. These tests shall be performed in accordance with ASTM D512. The soluble chloride ion content shall not exceed 250 ppm (0.15% by weight of cement).
- E. Prepare test samples of hardened concrete from all concrete suppliers on a monthly basis, as follows, to determine soluble chloride ion content.
1. A standard 3-inch diameter by 6-inch long, seven (7) day cured concrete sample shall be ground and pulverized. One-hundred percent of the resulting powder shall pass a number 20 sieve.
 2. Mix powder with an equal or greater amount of distilled or deionized water, by weight; boil for five minutes and soak for twenty-four hours at 70 to 72 degrees F.
 3. Test the water extract for soluble chloride ions in accordance with ASTM D512, "Test for Chloride Ion in Water and Waste Water". Calculate soluble chloride ion content as a function of the powder/water concentration from Paragraph 3.2 E.2 above.
 4. Soluble chloride ion content in hardened concrete shall not exceed 250 ppm (0.15% by weight of cement).

3.3 TEMPERATURE CONTROL

- A. Verify that aggregates are not prepared by methods which produce concrete having a temperature of not more than 90 degrees F and not less than 55 degrees F at the time of placement.
- B. When concrete temperature exceeds 85 degrees F, the concrete ingredients shall be cooled. When concrete temperatures fall below 50 degrees F, the ingredients shall be heated.

3.4 ADMIXTURES

Verify that admixtures are dispensed for each batch from a dispenser having capacity to measure the quantity and to be visually witnessed for one batch accurately.

3.5 FIELD QUALITY CONTROL

Permit the Construction Manager to take concrete for molding test specimens and determining Entrained Air Content at points of delivery of concrete to Work Site, for testing in accordance with ASTM C39 and Section 16 of ASTM C94.

END OF SECTION

SECTION 03347

EXPOSED FINISH CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Work specified in this Section consists of exposed finish concrete Work as indicated.
- B. Definition - Exposed finish concrete is cast-in-place concrete exposed to view of the public and meeting special architectural requirements.
- C. This section indicates the requirements for materials and practices necessary to form and place the exposed finish concrete Work to meet the design requirements of color, texture, finish and other architectural qualities.

1.2 QUALITY ASSURANCE

- A. Qualifications - Contractors and their supervisory personnel engaged in the Work of this Section must have five years successful experience with Work comparable to that indicated and specified.
- B. Reference Standards - In addition to requirements shown or specified herein, comply with the recommendations of Chapter 11, Formwork for Architectural Concrete, Special Publication No. 4, Formwork for Concrete, published by ACI, ACI 303-R, Guide to Cast-In-Place Architectural Concrete Practice, and as specified in Section 03300, Cast-In-Place Concrete, and Section 3301, Portland Cement Concrete.
- C. Job Mock-Up
 - 1. Construct a mock-up as indicated, using the materials, forming systems and construction methods proposed for use in the Contract.
 - 2. Provide mock-up finish having a uniform appearance equal in all respects to the accepted sample provided under Para- graph 1.3B of this Section.
 - 3. If this mock-up is not satisfactory, construct additional mock-ups until accepted.
 - 4. Remove the mock-up from the site when directed by the Construction Manager at no additional cost.
- D. Coordination - Within 30 days following award of the Contract, schedule a meeting at a mutually agreeable time to include the Construction Manager, the Contractor's superintendent, the concrete supplier and the formwork manufacturer to discuss submittals of

concrete mix, formwork or Working Drawings, materials, methods of Work and forming systems for exposed finish concrete Work.

1.3 SUBMITTALS

- A. Refer to Section 01300, Submittals, and 01340, Shop Drawings, Product Data, and Samples, for submittal procedures.
- B. Prior to the construction of the mock-up, prepare samples using the same materials and finishes proposed for the final construction. Samples shall be clearly identified and correlated with a record of the mix design, including admixtures and form release agents used in each sample. Such samples shall be submitted for the Construction Manager's review at the Worksite. If additional samples are required to achieve the desired finish appearance, the Contractor shall prepare same at no additional cost to the COMMISSION.
- C. Shop Drawings
 1. Submit Shop Drawings for typical and special exposed finish concrete formwork, and a written description of the proposed construction methods, including type of forms, materials and accessories, method of concrete placement, vibrating techniques and methods of assuring alignment of forms and finishing schedule.
 2. Review of Shop Drawings by the Construction Manager shall be prior to fabrication of the forming system.

PART 2 - PRODUCTS

2.1 FORMWORK

A. Design

1. Design forms to permit easy removal. Do not pry against the face of the concrete. Use wooden wedges.
2. Provide new plywood panels standard size, or larger if required, to eliminate butt joints at other than rustications.
3. Provide completely rigid forms strong enough to withstand, without leakage, the hydraulic pressures which result from rapid filling and heavy high-frequency vibration. Limit deflection of each formwork component to 1/360 of the component span.
4. Provide concrete surface at abrasive blasted areas with no indication of the forming system on the finished surface.
5. Gasket, plug and caulk joints, gaps and appertures in forms, wherever located, with a suitable material so that they will withstand the full concrete hydraulic pressure and will remain watertight.

- B. Rustication Strips - Mill rustication strips straight and kerfed on the back face without protruding splinters which may become embedded in the concrete. Seal before application to the forms.
- C. Construction Joints - Place rustication at construction joints with the first casting. Remove loose concrete, dust and other fine material from the surface prior to the erection of forms. Hold the formwork for the succeeding lift tight against the top of the previous lift and gasket or caulk to prevent grout or paste leakage.
- D. Form Ties - Provide plastic cone or washer type form ties spaced in a uniform pattern. Tie system and pattern will be reviewed by the Construction Manager. Position cones or washers so as to completely cover the hole in the form.
 - 1. Do not permit integral form ties except as indicated.
 - 2. Patch tie holes to match surrounding surfaces and strike off flush.

2.2 FORMWORK MATERIALS

- A. General - The following is a list of finishes giving a range of materials to achieve corresponding finishes. Fabricate using an experienced manufacturer acceptable to the Construction Manager.
- B. Finish No. 1 Smooth Exposed
 - 1. Fiberglass reinforced plastic (FRP) - Provide forms manufactured with a thixotropic isophtholic polyester resin containing not less than 32 percent fiberglass.
 - 2. Steel fabricated of 3/16-inch-thick steel, with ribbing spaced a maximum of 12 inches center to center and minimum weld and camber deflection. Grind weld flush.
 - 3. High Density (60 - 60) Overlay Plyform, Class 1, EXTDFPA, sanded, grade trademarked by the American Plywood Association.
- C. Finish No. 2 Patterned Formboard - Texture, pattern and joint spacing to be determined by the Construction Manager.
 - 1. Fiberglass reinforced plastic (FRP) - Provide forms manufactured with a thixotropic isophtholic polyester resin containing not less than 32 percent fiberglass.
 - 2. Steel Forms - fabricated of 3/16-inch-thick steel, with ribbing spaced as required with minimum weld and camber deflection. Grind welds flush.
 - 3. Wood Formboard - 3/4-inch No. 2 common lumber, square edge mill finish, random lengths. Use square edge lumber as a liner over B-C Plyform EXT-DFPA or tongue and groove lumber with joints on

the back face of the form sealed with tape or caulking to prevent leakage.

D. Finish No. 3, Abrasive Blasted Exposed Aggregate

1. Fiberglass reinforced plastic (FRP) - Provide forms manufactured with a thixotropic isophtholic polyester resin containing not less than 32 percent fiberglass.
2. Steel - Fabricate forms of 3/16-inch-thick steel, with ribbing spaced a maximum of 12 inches center to center and minimum weld and camber deflection. Grind welds flush.
3. B-B Plyform, Class I, EXT-DFPA, sanded, not oiled, grade trademarked by the American Plywood Association. B-B Plyform to be treated on the edges and casting face with a two-component polyurethane form coating material equivalent to "Matte Finish" as manufactured by The Burke Co., San Mateo, CA. Apply form coating materials in accordance with the manufacturer's recommendations. Fill boat patches and splits before applying the coating.

2.3 CONCRETE OR MASONRY CLEANERS

"Sure Klean," as manufactured by the Process Solvent Co., Inc., Kansas City, or equal, acceptable to the Construction Manager.

PART 3 - EXECUTION

3.1 PROVIDE fabrication and erection of formwork, placement of reinforcing and concrete as specified in Sections 03100, Concrete Formwork, and 03200, Concrete Reinforcement, except as hereinafter modified.

3.2 FORMWORK TOLERANCES

- A. Hydraulic Pressure - Design forms, studs and wales to limit deflections between supports and stiffening members to 1/360th of the span.
- B. Finish Line - Position formwork to maintain hardened concrete finish lines within the following permissible deviations.
 1. Variation from Plumb
 - a. In ten feet1/4 inch
 2. Cross-sectional Dimensions
 - a. Minus1/8 inch
 - b. Plus1/8 inch

3. Surface Tolerances - Maximum offset between butt joints of individual or ganged forms - 1/32 inch.

3.3 ABRASIVE BLASTING

- A. Exposed surfaces of concrete indicated as being Finish No. 3 a uniform appearance equal in all respects to the finish approved by the Construction Manager.
- B. Time and Sequence - Begin abrasive blasting no earlier than 28 days after placement of exposed finish concrete or at such time as determined by the Contractor and approved by the Construction Manager so the desired appearance can be achieved.
- C. Abrasive Material - Use an abrasive material of the type and gradation required to expose the aggregate and surrounding surface to a depth of approximately:
 1. Light Abrasion.....1/16 inch
 2. Medium Abrasion.....1/8 inch to 3/16 inch
- D. Preparation and Execution
 1. Provide suitable control and comply with regulations for collecting grit and dust from the abrasive blasting operation to prevent damage or claims resulting from this operation.
 2. If an offset in butt joints of the forms is reflected in the concrete greater than 1/32 inch, bushhammer the projecting lip with a needle scaler or grind flush with the adjacent lower surface before abrasive blasting. Bushhammer or grind in such a manner as to assure a uniform appearing surface.
 3. Abrasive blast in one continuous operation.
 4. Mask adjacent Work or suitably protect from abrasive blasting.
 5. Abrasive blast corners carefully, using backup boards, in order to preserve a uniform corner line. Provide the type of nozzle, nozzle pressure and methods as determined by the job samples specified.

3.4 REPAIR

Provide patches indistinguishable from the surrounding area.

3.5 CLEANING

- A. Make provisions to keep exposed finish concrete free from laitance caused by spillage or leaking forms or other contaminants. Do not allow laitance to penetrate, stain, or harden on finished surfaces.

- B. Clean abrasive blasted surfaces before the first application of the anti-graffiti coating.
- C. Thoroughly rinse surfaces which are cleaned with a liquid cleaner and allow to dry before application of anti-graffiti coating. Apply liquid cleaners in accordance with the manufacturer's instructions.

END OF SECTION

Conformed Contract
LACTC

03347-6

Contract No. R01-T01-H0860
09.13.9

SECTION 05120

STRUCTURAL STEEL

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of fabricating and erecting structural steel.

1.2 QUALITY ASSURANCE

A. Allowable deviation of bearing surfaces from true plane.

1. In 12 inches - within 1/8 inch
2. In more than 12 inches - within 3/16 inch

B. Qualifications - Qualify welding processes and welding operators in conformance with AWS B3.0 "Standard Qualification Procedures."

C. The COMMISSION will select a Testing Laboratory to provide the inspection and testing required by these Specifications. Cost of the inspections and testing will be borne by the COMMISSION provided satisfactory results are obtained. The cost of retesting will be borne by the Contractor.

D. Identify structural steel by the name and location of the mill and the heat number. Provide records of the mill analysis.

1. If steel cannot be identified by heat number and manufacturer's name, provide the results of one tension and one bend test for each ten tons, or fraction thereof, from each supplier.
2. Test specimens, as required, shall be secured by the steel fabricator under the direction of the Testing Laboratory.

1.3 SUBMITTALS

A. Refer to Sections 01300, Submittals, 01340, Shop Drawings, Product Data, and Samples, for submittal procedures.

B. Submit Shop and Erection Drawings which have been executed in conformance with Section 01340. These Drawings shall indicate the details for fabrication and assembly along with the torquing order for each bolted assembly, the direction and sequence of welding for each welded assembly. Use American Welding Society (AWS) symbols for defining the type, size and length of welds. Indicate which welds are to be performed in the shop and which welds are to be performed in the field.

C. Submit bill of materials, and producer's or manufacturer's specifications and installation instructions along with laboratory test reports for the following items:

1. Threaded fasteners ✓

2. Washers ✓

3. Welding electrodes ✓

4. Non-shrink grout ✓

D. Submit ^{notarized} a certified copy of the mill analysis for each heat of steel in each delivery. The mill analysis shall identify the name and location of the manufacturer. ✓

E. Submit laboratory report of the results of one tension and one bend test for each heat of steel in each delivery. ✓

F. Submit welding procedures and performance qualifications in accordance with AWS D1.1. ✓

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Load, transport, unload and store products in a manner consistent with the design of the members, assemblies, packaging and order of need in the erection procedure.

B. Store products above grade on skids or platforms. Protect them from the weather, damage and corrosion.

C. Provide setting drawings, templates, and directions for the installation of the anchor bolts and other devices which are to be embedded in concrete or masonry in time for them to be installed before the start of concrete or masonry operations.

1.5 QUALIFICATIONS OF WELDING PERSONNEL AND PROCEDURES

A. Procedures for welding structural steel shall have been qualified in conformance with AWS D1.1 and B3.0. ✓

B. Welders shall have been qualified in conformance with AWS B3.0 for the type of welding and the welding positions to be utilized in this Contract.

C. Maintain a file of welding procedure specifications, procedure qualification records and welder performance qualification test results at the Worksite for submittal to the Construction Manager.

PART 2 - PRODUCTS

2.1 STRUCTURAL STEEL FOR STRUCTURES

- A. Carbon steel - ASTM A36.**
- B. High-strength, low-alloy steel:**
 - 1. For riveted or bolted construction - ASTM A440 or A441.**
 - 2. For welded construction - ASTM A441.**

2.2 STRUCTURAL STEEL TUBING AND PIPE

- A. Cold-formed carbon steel - ASTM A500, Grade B.**
- B. Hot-formed carbon steel - ASTM A501.**
- C. High-strength, low-alloy steel - ASTM A618.**
- D. Pipe - ASTM A53, type E or S, Grade B.**

2.3 FASTENERS

- A. Carbon steel bolts and nuts - ASTM A307, Grade A, ASTM A325.**
- B. High-strength carbon steel bolts, nuts, and washers - ASTM A325, Type 1, except provide Type 3 with corrosion-resistant steel.**
- C. High-strength alloy steel bolts, nuts, and washers:**
 - 1. Bolts - ASTM A490, Type 1, except provide Type 3 with corrosion-resistant steel.**
 - 2. Nuts:**
 - a. For Type 1 bolts - ASTM A194, Grade 2H, or ASTM A563, Grade DH.**
 - b. For Type 3 bolts - ASTM A490.**
 - 3. Washers - ASTM A325 or ASTM F436, type of steel to match bolt.**
- D. Lubricant for bolts - Molybdenum disulfide base.**
- E. Anchor bolts - ASTM A36.**

2.4 FORGINGS

ASTM A668, Class as follows:

- A. Carbon steel - Class C.
- B. Alloy Steel - Class G.

2.5 CASTINGS

- A. High-strength steel - ASTM A148, grade as indicated.
- B. Mild-to-medium strength carbon steel - ASTM A27, grade as indicated.
- C. Malleable iron - ASTM A47, Grade 35018.
- D. Gray iron - ASTM A48, Class 30B.

PART 3 - EXECUTION

3.1 FABRICATION

Fabricate shop assembly structural steel in conformance with AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" in the largest units consistent with handling and transportation of such prefabricated units. Weld shop connections. Use bolts, for bolted field connectors, conforming to ASTM A325, unless indicated otherwise.

3.2 WELDING

- A. Remove mill scale, slag, rust, moisture and other foreign substances from the weld zone to a line 1 1/2 inches beyond the expected toe of the weld in a manner which leaves no residue.
- B. Preheat steel having a surface temperature of less than 50 degrees F, to 300 degrees F prior to welding.
- C. Perform welding in conformance with the "Shielded Metal Arc Welding" (SMAW) process in conformance with AWS D1.1, Part B under the observation of a qualified inspector from the Testing Laboratory.
- D. Inspect every pass of each weld for quality, penetration, and conformity with design.
- E. Welds exposed to the weather in the completed structure shall be continuous, watertight and ground smooth. Welds exposed to public view shall be ground smooth.
- F. Piping and tubing welds shall have not less than two passes per joint. Starting and stopping points between passes shall be staggered

in multipass welds. Each weld pass shall deposit a layer of weld metal not thicker than 1/8 inch.

3.3 INSPECTION

Examine the areas and conditions under which Work is to be performed. Correct conditions detrimental to proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.4 ERECTION

A. Surveys - Check elevations of concrete surfaces, and locations of anchor bolts and similar items, before erection proceeds.

B. Anchor Bolts

1. Furnish and install templates and other devices as needed for the setting of bolts and other anchors which are to receive structural steel.
2. Install anchor bolts in templates and secure these templates to the forms for concrete after the installation of reinforcing steel.

C. Setting Bases and Bearing Plates

1. Clean concrete bearing surfaces free from bond-reducing materials, and then roughen to improve bond to surface. Clean the bottom surface of base and bearing plates.
2. Set base plates and bearing plates for structural members in their proper positions and secure them with wedges or threaded fasteners.

D. Assembly

1. Clean the bearing surfaces and other surfaces which will be in permanent contact before assembly.
2. Level and plumb individual members of the structure within AISC tolerances.
3. Perform adjustments to compensate for discrepancies in elevations and alignment. Immediately report errors in fabrication or deformation resulting from handling or transportation, which prevents the proper erection and fitting of parts, to the Construction Manager.
4. Comply with AISC Specifications for bearing, adequacy of temporary connections, and alignment.

3.6 THREADED FASTENERS

- A. Assemble high strength bolted structural joints with finished fasteners and load indicator washers. Tension of the bolt in the finished joint shall be as set forth in Table 3, Fastener Tension, of the Specification for Structural Joints Using ASTM A325 Bolts.
- B. High strength bolts and washers shall be clean and free of rust, and other foreign matter. Lubricate threads before installing.
- C. Place the load indicator washer on the bolt with protrusions facing the bolt head.
- D. Install a load indicating washer and bolt in the joint. Install a hardened round washer and a nut on the threaded end of the bolt. Observe special washer requirements, such as those related to slotted and oversize holes.
- E. Tighten the nuts in each joint uniformly to bring the connected members into moderate contact. Then torque each of the nuts in the joint uniformly, about immobilized bolts, until the average gap between the face of the load indicator washer and the underside of the bolt head is reduced to 0.015 inch.
- F. Tightening shall progress systematically from the most rigid part of the joint to its free edges until the load indicator washers on all bolts are closed to the required gap. The gap shall be checked with a feeler gauge and shall be equal to or less than the gap specified above. Complete closure of the gap is not required.
- G. When the load indicator washer is required under the nut, install the bolt in the joint. Place the load indicator washer on the bolt with the protrusions facing the nut; place a hardened round washer against the load indicator washer protrusions and install the nut. Tighten this assembly until the average gap between the load indicator and the hardened round washer is closed to not more than 0.015 inch when only the bolt head is turned during installation, or to not more than 0.005 inch when only the nut is turned in with the above procedure.
- H. If the load indicator washer must be placed under the bolt head, and the head shall be turned, then place a hardened round washer between the load indicator washer protrusions and the bolt head and close the average gap between the load indicator washer and the hardened round washer to not more than 0.005.
- I. Assemble secondary joints with unfinished fasteners and lock washers. Torque in conformance with Table I-A, Bolts and Rivets, Part 4, AISC Manual of Steel Construction.
- J. Remove temporary connections and members when permanent members are in place and final connections are made.

3.7 TOUCH-UP

- A. After erection, clean chips, skips and abrasions where paint has been removed, damaged, or burned; clean field bolts and field welds and coat as set forth under Shop Painting.
- B. Clean areas where galvanized surfaces have been damaged as a result of handling and erection or where field welding or bolting has occurred. Coat these areas with a field applied galvanizing compound such as Galvalloy by Metalloy Products, Co., Hardhat 2185 by Rustoleum or ZRC by ZRC Chemical Products.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of items indicated fabricated from steel and iron shapes, plates, bars, pipes, tubes, casting and roll-formed shapes which are not a part of an overall system specified in other Sections of these specifications.

1.2 QUALITY ASSURANCE

- A. Qualifications - Provide major items of Work fabricated by a firm specializing in "custom" type metal fabrication. Employ experienced trades workers for both fabrication and installation, who are capable of producing Work of the highest standards of quality in the industry.
- B. Reference Standards - The metal Work, except as otherwise indicated or specified, shall comply with the following codes, specifications and standards.
 - 1. "Specifications for the Design, Fabrication and Erection of Structural Steel for Building," including commentary of the AISC Specifications, AISC.
 - 2. "Specifications for the Design, Fabrication and Erection of Structural Members," AISI.
 - 3. "Structural Welding Code," AWS D 1.1.
 - 4. "General Requirements for Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use," ASTM A6.
 - 5. "Steel Structures Painting Manual, Volume 2, Systems and Specifications," (SSPC).

1.3 SUBMITTALS

- A. Refer to Sections 01300, Submittals, and 01340, Shop Drawings, Product Data, and Samples, for submittal procedures.
- B. Submit Shop Drawings for the fabrication and erection of assemblies of metal work which are not completely shown by manufacturer's data sheets. Include plan elevations at not less than one inch to one foot scale, and include details of sections and connections at not less than three inch to one foot scale. Show anchorage and accessory items.

- C. Submit manufacturer's product data, and anchor details indicating compliance with the requirements of the Contract Documents, and installation instructions for products to be used in the fabrication of metal Work, including paint products.
- D. Welder certifications and qualifications, as required by AWS B3.0.

PART 2 - PRODUCTS

2.1 METAL STANDARDS

- A. Structural Steel Shapes and Plates - ASTM A36 and ASTM A6.
- B. Steel Plate for Cold-Forming - ASTM A283 Grade C and ASTM A6.
- C. Hot-Rolled Steel Bars (including Bar-size shapes) - ASTM A575 (Merchant Quality) or ASTM A576 (Special Quality), quality and grade as selected by fabricator as best suited for its use and ASTM A29.
- D. Cold-Finished Steel Bars - ASTM A108, grade as selected by fabricator as best suited for its use, and ASTM A29.
- E. Steel Pipe - ASTM A53, Type E, F or S at fabricator's option, Grade A, black finish unless indicated or specified as galvanized, standard weight (Schedule 40) unless otherwise required by the Structural Engineer.
- F. Hot-Formed Rectangular Steel Tubing - ASTM A501, butt-welded, cold-finished and stress relieved.
- G. Steel Sheet for Cold-Forming - ASTM A569 and ASTM A568, hot-rolled sheet steel of commercial quality, pickled and oiled, free of defects which would impair the Work.

2.2 FASTENERS AND ANCHORAGE MATERIALS

- A. Items listed below are indicated for minimum general conditions.
 - 1. Bolts and Nuts - ASTM A307, Grade A., ASTM A325.
 - 2. Machine Screws - FS FF-S-92, cadmium-plated steel.
 - 3. Expansion Bolts - Toothed steel or lead shield expansion devices to the type and size indicated, with galvanized bolts, except do not use lead shield for overhead anchorage.
 - 4. Washers - Carbon steel; plain, round complying with FS FF-W-92; locking, helical spring complying with FS FF-2-84.
 - 5. Concrete Inserts - Furnish unit-type inserts of the type and size indicated, of cast iron, malleable iron or hot-dip zinc-coated steel.

2.3 SHOP PRIMERS

- A. General - Primers selected shall be compatible with finish paints.
- B. Ferrous Metal (Fast Drying) - For clean smooth surfaces, one of the following.
 - 1. FS TT-P-645 Type II, zinc chromate, alkyd-type.
 - 2. 2161 Zip/Dry, Detroit Graphite.
 - 3. E61 R 9 Kem Fast Dry Primer; Sherwin Williams.
 - 4. 678 Quick Drying Red Primer; Rust-Oleum.
- C. Ferrous Metal (Slow Drying) - For clean rough surfaces with light rust or mill scale, one of the following:
 - 1. FS TT-P-86 Type II, red lead, alkyd varnish, linseed oil, iron oxide.
 - 2. 501 Prime-Rite; Detroit Graphite Co.
 - 3. E41 N 1 Kromik Metal Primer - Sherwin-Williams.
 - 4. 1069 Heavy Duty Red Primer - Rust-Oleum.
- D. Galvanized Metal - Pretreat galvanized metal surfaces in accordance with MIL-T-12879, Type 1, Class 1, or SSPC-Paint 27. Prime coat with one of the following:
 - 1. FS TT-P641 Type II or Type III, zinc dust, zinc oxide, alkyd or phenolic.
 - 2. 721 Phenolic Zinc Rich - Detroit Graphite.
 - 3. B50 A 1 Galvanized Iron Primer - Sherman-Williams.
 - 4. 5529 Galvanized Iron Primer - Glidden-Durkee.
 - 5. Galvanized Metal Primer - Pratt & Lambert.

2.4 FABRICATION, GENERAL

- A. For the fabrication of metal Work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, grinding, or by welding and grinding, prior to cleaning, treating and application of finishes including zinc coatings.
- B. Use materials of the size and thicknesses indicated, or if not indicated, of the required size and thickness to produce adequate strength and durability in the finished product for the intended use. Work to the dimensions shown or accepted on Shop Drawings, using

proven details of fabrication and support. Use the type of materials indicated or specified for the various components of Work.

- C. Form exposed Work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise indicated. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the Work.
- D. Verify dimensions by accurate field measurement before fabrication wherever Work adjoins other Work that precedes it in construction. However, do not delay job progress; allow for trimming and fitting of metal Work wherever the taking of field measurements before fabrication might delay the Work. On Shop Drawings, note which dimensions have been verified by field measurement.
- E. Weld corners and seams continuously and in accordance with the recommendations of AWS. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.
- F. Form exposed connections with hairline joints which are flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of the type indicated, or if not indicated, use Phillips flat-head (countersunk) screws or bolts.
- G. Predrill bolt and screw holes as indicated and as required for attachment of metal Work and for the attachment of adjacent materials.
- H. Furnish inserts and anchoring devices which must be set in concrete for the installation of metal Work. Coordinate delivery of such devices with other Work to avoid delay. See concrete Section of these Specifications for installation of such insets and anchoring devices.
- I. Provide for anchorage of the type indicated. Fabricate and space anchoring devices as indicated and as required to provide adequate support for the intended use of the Work.
- J. Cut, reinforce, drill and tap metal Work as may be required to receive other items of Work.
- K. Use hot-rolled steel bar for Work fabricated from bar stock, unless Work is indicated or specified to be fabricated from cold-finished or cold-rolled stock.
- L. Preassemble Work at shop to the greatest extent possible to minimize field splicing assembly of units at the site. Disassemble units to the extent necessary to comply with shipping limitations. Mark units clearly for reassembly and proper installation.
- M. Where indicated as galvanized, complete the shop fabrication prior to application of the coating. Remove mill scale and rust, clean and pickle the units as required for coating. Apply hot-dip zinc coating of two ounces in accordance with ASTM A123.

2.5 SHOP PAINTING, GENERAL

Clean, treat, and paint metal Work in the shop prior to delivery to the site, except for Work which has been hot-dip galvanized after fabrication. Include surfaces, inside and out, whether exposed or concealed in the construction.

2.6 EXPOSED EXTERIOR ITEMS

- A. Apply the following cleaning, treatment and painting to exterior Work which is either fully exposed or only partially exposed, and also to exposed interior Work in areas designated as high humidity areas.
- B. Clean by "Solvent Cleaning" method specified in SSPC-SP-1, following by "Power Tool Cleaning" to remove loose mill scale and rust by methods specified in SSPC-SP-3, followed by "Pickling" to remove remaining mill scale and rust by methods specified in SSPC-SP 8. Power tool cleaning and pickling may be omitted from Work fabricated from cold-rolled or cold-finished stock, and from castings, provided the surfaces are not heavily rusted.
- C. Apply pretreatment to inhibit corrosion and improve paint adhesion, by methods specified in SSPC-PT 2 for "Cold Phosphate" treatment, or by methods specified in SSPC-PT 4 for "Hot Phosphate" treatment.
- D. Apply prime coat of metal primer paint as soon as possible after pre-treatment. Provide a smooth coat, with uniform dry film thickness of two mils.

2.7 GALVANIZING

Hot-dip galvanize in conformance with ASTM A123.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set metal Work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Temporarily brace or anchor in formwork where Work is to be built into concrete or similar construction.
- B. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

- C. Anchor securely as shown or as required for the intended use, using concealed anchors wherever possible.
- D. Install insulating devices or butyl tapes in between dissimilar metals.

3.2 TOUCH-UP

- A. Immediately after erection, clean field welds, bolted connections and abraded areas of shop coating.
- B. Paint those areas with the same material as used for shop painting.
- C. Coat areas of damaged galvanizing with a compound such as Galvalloy by Metalloy Products Co., Hardhat 2185 by Rustoleum, or ZRC by ZRC Chemical Products.

END OF SECTION

SECTION 05521

PIPE SIGN MASTS

PART 1 - GENERAL

1.1 DESCRIPTION

The Work specified in this Section consists of pipe masts as indicated.

1.2 SUBMITTALS

- A. Refer to Sections 01300, Submittals, and 01340, Shop Drawings, Product Data, and Samples, for submittal procedures
- B. Submit Shop Drawings showing layout, location, sections, elevation, details, dimensions, finishes and installation details.
- C. Submit manufacturer's data of proprietary items.

PART 2 - PRODUCTS

2.1 MASTS

- A. In accordance with Section 05500, Metal Fabrications ✓
- B. Pipe - Fabricate from pipe size as shown on the drawings, and weight as required by the Structural Engineer.
- C. Provide brackets and anchors for masts as indicated and required.
- D. Signage - Fabricate from pipe and steel shapes as shown on drawings.

2.2 PIPE

- A. Custom fabricate pipe to the dimensions and details indicated, with smooth bends and welded joints ground smooth and flush.
- B. Galvanize pipe except as otherwise indicated. Galvanize after fabrication.

PART 3 - EXECUTION

3.1 INSTALLATION

Install steel pipe in accordance with Section 05500, Metal Fabrications and as indicated.

3.2 TOUCH-UP

Touch up damaged galvanized surfaces with commercial, zinc-rich, galvanizing compound in accordance with Section 05500, Metal Fabrications.

END OF SECTION

SECTION 09901

ANTI-GRAFFITI COATING

PART I - GENERAL

1.1 DESCRIPTION

- A. The Work specified in this Section consists of furnishing and applying anti-graffiti coating to concrete and metallic surfaces, of all graphic and signage elements.
- B. The Work includes preparation of substrate and removal of graffiti from untreated surfaces before application of the coating. Anti-graffiti coating shall be applied to all surfaces, vulnerable to vandalism and graffiti, and visible to the public.
- C. The coating shall not be applied to surfaces hidden from public view.

1.2 QUALITY ASSURANCE

A. Reference Standards

- 1. American Society for Testing and Materials (ASTM)

ASTM E84 Surface Burning Characteristics of Building Materials

- 2. National Fire Protection Association (NFPA)

NFPA 101 Safety to Life From Fire in Buildings and Structures

- B. Mock-up Test Surfaces: Prepare an approved test surface with anti-graffiti coating to represent the standard of texture and workmanship for the Work. Coat the surface as specified herein and in accordance with the manufacturer's recommendations. Allow the material to cure, apply graffiti as directed by the Construction Manager, and then remove the graffiti. The cleaned surface shall be undamaged and shall display no graffiti "shadows" or "ghosts". Do not apply anti-graffiti coating to the Work before the sample surface has been approved by the Construction Manager.

1.3 SUBMITTALS

- A. Refer to Section 01300, Submittals, and Section 01340, Shop Drawings, Product Data and Samples, for submittal procedures.
- B. Notarized Certificates of Compliance for the products used.

- C. A list of materials used in the coating system, and materials safety data sheets.
- D. Certificate from the manufacturer confirming the qualifications and competence of the authorized coating applicator.
- E. A notarized certificate confirming that the coating and graffiti remover have performed satisfactorily for at least five years in work similar to that specified herein. The certificate shall provide clear details of the locations of the projects previously performed.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. First Coat - L.M. Scofield Co. REPELLO Protective System, a water based, clear, sacrificial liquid, or approved equal.
- B. Second Finish Coat - Similar to first coat, to provide required coverage.
- C. Third Finish Coat - Similar to first finish coat, as required.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Ensure that the surface is free of contaminants such as dust, dirt, grease, wax, grime and loose paint. Clean the surface by any of the following methods, as appropriate:
 - 1. Hosing - Use water at a minimum pressure of 2,000 psi. Applicable to porous, painted, metal and sealed surfaces.
 - 2. Steam cleaning - Use high, medium or low pressure depending on the condition of the surface. Applicable to porous, metal and sealed surfaces.
 - 3. Sand- or water-blasting - Remove sand residue with water rinsing. Applicable to porous and metal surfaces.
 - 4. Cleaning solution - Scrub with a low-residue, easily rinsed solution to remove grease and wax build-up. Applicable to porous, painted, metal and sealed surfaces.
 - 5. Solvent washing - Use an approved solvent to remove existing graffiti before applying the coating. Applicable to painted, metal and sealed surfaces.
 - 6. Sandpaper or wire-wool cleaning - Wipe surface to remove residue. Applicable to metal and sealed surfaces.

7. Acid etching - Remove acid residue with water rinsing.
Applicable to porous, painted, metal and sealed surfaces.

B. Surface to be coated must be a clean wettable surface. If water beads on the surface it shall be washed with a high quality detergent and water to reduce surface tension and allow surface to wet.

3.2 APPLICATION

Apply the protective surface system in accordance with the manufacturer's instructions.

3.3 COVERAGE

Approximate rate of coverage is 100 square feet per gallon of coating applied in two coats; or 200 square feet per gallon per coat.

3.4 CLEAN UP

At completion of the Work, clean work site, dispose of excess materials, containers and waste as directed, and leave the Worksite in a condition acceptable to the Construction Manager.

END OF SECTION

SECTION 10440

SITE AND OPERATION SIGNS FOR STATIONS,
SITES, BUILDINGS AND RIGHT OF WAY

PART 1 - GENERAL

1.1 SUMMARY

Fabricate and install sign work as shown on the drawings and required by this specification.

1.2 WORK INCLUDES

- A. Directional and informational exterior and interior signs located at stations, sites, buildings and right of way.
- B. Structural design of all concrete work and steel sign support structures shown on the drawings.
- C. Fabrication and installation of all concrete and steel work for free standing signage.

1.3 SUBMITTALS

Submit the following information to the Construction Manager for approval:

- A. Technical specifications: Submit technical specifications of all paint, coatings, or other finish materials along with actual samples of these finishes. Submit two (2) copies each.
- B. Verification of Documents: Thoroughly review Contract Documents, checking conditions and dimensions shown. Notify the Construction Manager of discrepancies or changes required in the Contract Documents.
- C. Permits: Obtain and pay for required permits, including, but not limited to, City, County, State and Federal permits.
- D. Shop Drawings: Submit complete Shop Drawings, catalog cuts, templates, erection and installation details for complete project. Indicate dimensions, construction details, reinforcement, anchorage, and installation. Show relation to building and site construction.
- E. Samples: Provide complete samples, ready for installation. Samples may be installed in the work, provided each sample is clearly identified and its location recorded. Submit samples of the following items:
 - 1. Lettering Patterns: Submit full size lettering patterns of all sign messages, symbols, arrows or other graphics elements related to sign fabrication, excluding die-cut vinyl letters or

numbers. Typeset copy for messages with phototypesetter or other method approved by Construction Manager. Large copy shall be optically or photographically enlarged in stages and hand corrected. Produce camera ready artwork for arrows and symbols. Submit three (3) copies each.

2. Vinyl Copy: Submit one line samples of each size, color, typeface, arrow and symbol mounted on pre-spaced tapes. Submit three (3) copies each. ✓
3. Screen Processed Copy: Screen processed copy to utilize photo produced rather than hand-cut screens. Submit blueline prints of the film positives that will be used to produce screens. Submit three (3) copies each. ✓
4. Finish Sample: Submit finish samples of all materials, coatings, paint and finishes. Submit three (3) copies each. ✓
5. Prototype Sign Samples: Submit one (1) sample each, complete and finished, of each of the following sign items: ✓

STATION SIGNS:

Sign Type 1: 1 panel
Sign Type 3: None
Sign Type 4: None
Sign Type 5: 1 complete panel
Sign Type 6: None
Sign Type 7: None
Sign Type 8: None
Sign Type 9: 1 complete sign
Sign Type 10: None
Sign Type 11: None
Sign Type 12: None
Sign Type 13: None
Sign Type 14: None

SITE SIGNS:

Sign Type 20: 1 complete sign
Sign Type 21: None
Sign Type 22: 1 complete sign
Sign Type 23: None
Sign Type 24: None

BUILDING SIGNS:

Sign Type 40: 1 complete sign
Sign Type 41: None
Sign Type 42: 1 complete sign
Sign Type 43: 1 complete sign
Sign Type 44: None
Sign Type 45: None
Sign Type 46: None
Sign Type 47: 1 complete sign
Sign Type 48: None

Sign Type 50: 1 complete sign
Sign Type 52: 1 complete sign
Sign Type 53: None
Sign Type 54: None
Sign Type 55: None
Sign Type 56: None
Sign Type 58: 1 complete sign
Sign Type 61: 1 complete sign
Sign Type 64: None
Sign Type 65: None
Sign Type 66: None

Prototype review shall be conducted at project site.

6. *Notarized* Certificates of Compliance: Submit manufacturer's certificate of compliance for all paint, coatings, or other finish samples of these finishes. Submit three (3) copies each.
7. Paint Color Samples: Submit samples of all paint used in the project for review of color and texture. Provide a listing of the material and application for each coat of each finish sample. On 12" x 12" x .090 thick aluminum sheet provide samples of each color, with texture to simulate actual conditions. Resubmit each sample as requested until required sheen, color and texture is achieved. Submit three (3).
- F. Porcelain Enamel Color Samples: Provide color samples of each porcelain enamel color applied to 12" x 12" x 1/8" thick metal sheet, using the exact formulation that will be used during production of the signs. Submit three (3) copies each for approval.
- G. Hardware Samples: Submit samples of all hardware such as hinges, locks, and fasteners, which are exposed to view. Submit three (3) copies each for approval.
- H. Concrete Finish Samples: Submit 12" x 12" x 3" sample of concrete finish for exterior sign bases. Submit three (3) copies for approval.
- I. Graphics Schedule: All signs, messages and remarks described in the Graphics Schedule as prepared by the Construction Manager shall be an integral part of these project specifications and shall be included within the scope of work of this Contract.
- J. Structural Calculations and Drawings

Submit design calculations and drawings for all concrete and steel work of this contract. Calculations shall state criteria on which the design is based. Drawings shall detail all concrete reinforcing, bolts, sleeves, inserts and other imbeds required in the Work. Steel work drawings shall show all member sizes, dimensions and connection details. Calculations and drawing shall be signed and sealed by a structural Engineer registered in the State of California. Submit on reproducible and three copies of all material.

1.3 QUALITY ASSURANCE

Qualification of Welders: Welding to or on structural steel or miscellaneous items of structural steel shall be by certified welders qualified in accordance with AWS D1.1 using procedures, materials, and equipment of the type required for the work.

1.4 DELIVERY, STORAGE AND HANDLING

Transport, handle, store and protect in compliance with the provisions of Section 01600.

1.5 PROJECT/SITE CONDITIONS

A. In general, equipment and materials shall be stored off site until they are used on the Work. Equipment and materials located at the site, but not being used, shall be left at designated locations. All other operations shall be confined to the authorized or approved areas. Areas adjacent to the construction will be made available for temporary use without cost, whenever such use will not interfere with other purposes. Such use indicates acceptance of liability for any damage caused to such premises. Areas used for operations or for storage, and all areas adjacent to the construction shall be restored to their original condition prior to final acceptance of the Work.

B. Store equipment and materials left overnight in the designated areas. Areas adjacent to the construction will be made available for temporary use without cost whenever such use will not interfere with other purposes. Such use indicates acceptance of liability for any damage caused to such premises or areas.

1.6 SEQUENCING AND SCHEDULING

A. The schedule required by Section 01310 of these specifications shall detail areas of operations, work to be performed, equipment to be operated, and the applicable dates, all in such a manner as to indicate completion of the project within the specified time. Furnish sufficient equipment, materials, labor and supervision to maintain schedule.

B. The Construction Manager reserves the right to modify the proposed schedule to eliminate conflicts and interferences.

1.7 MAINTENANCE

Provide a training session and maintenance manual to enable Owner to maintain signs.

1.8 STRUCTURAL DESIGN CRITERIA

A. Steel Work

1. Uniform Building Code, 1985 Edition
2. Wind load 40 PSF
3. Seismic design force 0.28W

B. Concrete Work

1. Uniform Building Code, 1985 Edition
2. Spread footings may be used to support lightly-loaded signs along the at-grade alignment. Spread footings carried into undisturbed natural soils or established in properly compacted fill may be designed to impose a net dead plus live load pressure of 1,000 pounds per square foot at a depth of at least 1 1/2 feet below the adjacent grade. A one-third increase in the bearing value may be used for wind or seismic loads. Footings should be deepened as necessary to extend into suitable soils. Alternatively, any unsuitable soils should be excavated and replaced with properly compacted fill. All fill soils should be compacted to at least 90% of the maximum density obtainable by the ASTM Designation D1557-78 method of compaction.
3. Drilled and cast-in-place concrete piles may be used to support heavy signs. The pile capacities may be computed using the following soil properties:

TABLE I

MC 5 SPTC RAILROAD RELOCATION

<u>Location</u>	<u>0 (deg)</u>	<u>C (psf)</u>	<u>Moist Unit Weight (pcf)</u>	<u>Average(1) Friction (psf)</u>	<u>Passive(2) Pressure (pcf)</u>
Entire Alignment	25	250	110	450	500

- Notes: (1) May be used to calculate downward capacities of drilled piers.
(2) May be used to calculate lateral capacity, if used with an acceptable pole formula, such as that in the Uniform Building Code.

TABLE 2

MID-CORRIDOR

<u>Location</u>	<u>0 (deg)</u>	<u>C (psf)</u>	<u>Moist Unit Weight (psf)</u>	<u>Average(1) Friction (psf)</u>	<u>Passive(2) Pressure (pcf)</u>
Washington Blvd. to Nadeau St.	31	100	105	450	500
Nadeau St. to 89th St.	25	200	120	250	400
89th St. to Alameda St.	31	100	110	450	500
Alameda St. to Del Amo Blvd.	25	250	110	450	500

TABLE 3

DOWNTOWN LOS ANGELES AT-GRADE ALIGNMENT

<u>Location</u>	<u>0 (deg)</u>	<u>C (psf)</u>	<u>Moist Unit Weight (psf)</u>	<u>Average(1) Friction (psf)</u>	<u>Passive(2) Pressure (pcf)</u>
Along Flower Street	36	250	130	500	500
Along Washington Blvd.	29	50	115	400	500

- Notes:
- (1) May be used to calculate downward capacities of drilled piers.
 - (2) May be used to calculate lateral capacity, if used with an acceptable pole formula, such as that in the Uniform Building Code.

TABLE 4

LONG BEACH ALIGNMENT

<u>Location</u>	<u>0 (deg)</u>	<u>C (psf)</u>	<u>Moist Unit Weight (psf)</u>	<u>Average(1) Friction (psf)</u>	<u>Passive(2) Pressure (pcf)</u>
Los Angeles River to Bixby Bridge	25	300	115	300	400
Bixby Bridge to Wardlow Road	23	400	110	450	500
Wardlow Road to Spring St.	25	300	115	300	400
Spring St. to 15th St.	30	250	115	450	500
15th Street to Ocean Blvd.	28	700	120	500	500

TABLE 5

LONG BEACH LOOP

<u>Location</u>	<u>0 (deg)</u>	<u>C (psf)</u>	<u>Moist Unit Weight (psf)</u>	<u>Average(1) Friction (psf)</u>	<u>Passive(2) Pressure (pcf)</u>
Along 1st Street	25	300	110	300	400
Along Pacific Ave. and 8th St.	31	700	120	500	500

- Notes: (1) May be used to calculate downward capacities of drilled piers.
 (2) May be used to calculate lateral capacity, if used with an acceptable pole formula, such as that in the Uniform Building Code.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Materials and equipment shall conform to the respective specifications and standards and to the specifications herein.

- A. Adhesives: Silicone adhesive used for installing sign items shall be as manufactured by General Electric, Dow or equal. Black vinyl foam and black contact adhesive tape, as manufactured by 3M, shall be used in conjunction with silicone adhesives for installation of wall

signs, in thicknesses as required. Structural adhesives shall be Versilok acrylic structural adhesives as manufactured by Hughson Chemicals, or equal.

- B. Aluminum Plate/Aluminized Steel Sheet: Provide aluminum plate of alloy:

5005-H34 for anodized finish.

3003-H14 mill finish for painted finishes.

6061-H12 with an alloy 1230 cladding of 5% on both for porcelain enamel finishes.

Aluminum plate shall be panel flat, of thickness as noted on drawings. Provide 18 ga. aluminum coated steel sheet capable of accepting a porcelain enamel finish in accordance with PEI:ALS 105(69).

- C. Structural Steel and Aluminum: Structural steel and aluminum shapes, channels and extrusions shall be of the necessary shape, wall thickness, and alloy tempers as required to meet or exceed engineering requirements and satisfy all applicable codes. See Division 5 for steel work.

- D. Hardware: Provide and install all incidental hardware necessary for the proper functioning of signs, including but not limited to the following:

1. Hinges: Provide stainless steel hinges for all hinged access panels, finish shall match adjacent surface.

2. Locks: Provide pin tumbler locks for all access panels. Finish shall match adjacent surface.

3. Fasteners: Exposed fasteners shall be flat head stainless steel painted to match adjacent surfaces. Exposed fasteners shall be permitted only where specifically stated in the individual sign specifications and drawings. Provide stainless steel fasteners for assembling ferrous to non-ferrous metal.

4. All hardware shall be vandal resistant.

- E. Porcelain Enamel: All enclosures shall be constructed using porcelain enameled aluminum or steel sheets, panels and parts as shown on drawings. The porcelain enamel shall be applied in accordance with PEI:ALS 105(69) "Porcelain Enamel Institute Specification for Architectural Porcelain Enamel for Exterior Use". Mechanical fasteners shall be used throughout. No exposed fasteners shall be used except for access panels. Access panels shall be attached with tamper, resistant stainless steel flat head screws painted to match adjacent metal. Enclosures shall be reinforced with interior structural metal framing as required. Prevent corrosion due to electrolysis by separating ferrous and non-ferrous metals with neoprene or vinyl spacers, and stainless steel fasteners.

- F. Concrete: See Division 3.
- G. Vinyl Material:
1. Vinyl Letters: Vinyl letters shall be computer generated vinyl graphics as manufactured by Adgrafix Sign & Marking Systems/3M, (Santa Ana, California,) or equal. Material shall be 3M control tac film, series 180 white. All copy shall be pre-spaced on 3M series SCPM-3 application tape.
 2. Reflective Letters: Reflective letters shall be computer generated vinyl graphics as manufactured by Adgrafix Sign & Marking Systems/3M, or equal. Material shall be 3M scotchlite film, series 680 white. All copy shall be pre-spaced on 3M series SCPM-3 application tape.
 3. Symbol and Reverse Copy: Symbol and reverse copy shall be computer generated vinyl graphics as manufactured by Adgrafix Sign & Marking Systems/3M, or equal. Material shall be 3M vinyl film.
- H. Linear Polyurethane: Surfaces of all items requiring a painted finish, or noted on the drawings as linear polyurethane, shall be properly prepared. Tool marks and other imperfections shall be filled or sanded and buffed out. Joint fillers shall be sanded flush and smooth. Sufficient prime coats or under coats shall be applied to achieve a smooth and uniform surface. Except as otherwise noted on drawings and specifications, all prime coats and top coats shall be linear polyurethane to equal or exceed that manufactured by WLS Coatings (Harbor City, CA). All sign panels, enclosures and supports shall be spray painted, following the paint manufacturer's recommendations concerning thinning and application. All painted or coated surfaces shall be spray painted.
- I. Plexiglass or Acrylic Plastic: Plexiglass or acrylic plastic shall be Plexiglass II, as manufactured by Rohm and Haas Company, or approved equal. Thickness shall be as indicated on the drawings but not less than 1/8" thick. Plastic cements used to fabricate plastic parts shall be #4 cement as manufactured by Industrial Polychemical or approved equal. All plastics shall be of uniform color and translucence, as supplied by manufacturer. No uncemented plastic seams will be permitted. Exposed edges of plexiglass shall be finished so that no saw marks are visible.
- J. Paint: See Paragraph 2.1.16.
- K. Steel Tubing: Conform to "Specifications for Electric Resistance Welded Carbon and Alloy Steel Mechanical Tubing" (ASTM A513). Remove scale before finishing. Provide wall thickness to meet structural requirements.
- L. Plywood: Except as otherwise noted, plywood panels shall be fabricated of Duraply with all surfaces painted, including concealed

surfaces. Hand sand edges to prevent chipping due to handling. Tape, fill and sand edges prior to the application of paint.

- M. Polycarbonate Sheet Polycarbonate sheet shall be Lexan as manufactured by General Electric, or Tuffak as manufactured by Rohm and Haas, in thicknesses as indicated on the drawings.

2.2 FABRICATION AND MANUFACTURE

- A. Workmanship: All workmanship under this contract shall be performed by skilled craftsmen under the supervision of trained foremen, experienced in the trade or craft required to accomplish the work and produce a product of high quality. All material provided shall be new and of highest quality. These general requirements apply equally to items provided by the Contractor and by his sub-Contractors. Contractor shall provide his sub-Contractors with all necessary information, including up-to-date drawings, specifications, graphic schedules, and shall supervise their work and coordinate with other Contractors' work on site. Verify all measurements and take all field measurements necessary before fabrication. Provide materials and parts necessary to complete each item. Provide all bolts anchors, supports, braces, connections, and other items necessary for completion of the work. Provide necessary rebates, lugs, and brackets so that the work can be assembled in a neat and substantial manner. Form signs to shape and size, with sharp lines and angles and true curves. Drill or punch holes for bolts and screws. Drilling and punching shall produce clean, true lines and surfaces. Weld to or on structural steel in accordance with AWS D1.1. Weld continuously along the entire area of contact. Grind exposed welds smooth. Exposed surfaces of work shall have a smooth finish and exposed riveting shall be flush. Exposed fastenings shall match in color and finish, and shall harmonize with the materials to which fastenings are applied. Conceal fastenings where practical. All ferrous metal items shall be galvanized using the hot-dip process after fabrication. Galvanize in accordance with ASTM A 123, ASTM A 153, ASTM A 386, and ASTM A 525, as applicable. Thickness of metal and details of assembly and supports shall give ample strength and stiffness. Where tight fits are required, make joints to a close fit. Form joints exposed to the weather to exclude water. Include drainage and weep holes required to prevent build-up of condensation. Accurately set work to established lines and elevations and securely fasten in place. Execute and finish work in accordance with approved drawings, cuts, details and samples.
- B. Dissimilar Materials: Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure-treated wood, or absorptive materials subject to wetting, protect the surfaces with a coat of bituminous paint conforming to Mil. Spec. MIL-C-18480 or to Fed. Spec. TT-V-51 or a coat of zinc chromate primer conforming to Fed. Spec. TT-P-664 to prevent galvanic or corrosive action.

C. Exterior signage: See drawings for size and dimensions, mounting methods and colors.

1. Copy Application General Requirements: The project typeface shall be used for all copy application except as otherwise noted on the drawings. All letter forms shall follow this typeface, the size and placement of copy shall follow dimensions and spacing indicated on approved lettering patterns. Lines of copy shall be straight and parallel to the sign format. Edges of letters shall be smooth, with straight or curved portions reproducing the original project typeface exactly. Corners of letters or numbers shall be sharp and true. Pay particular attention to rounded letter forms; these extend slightly above and below the normal line of copy. All copy shall be free of ticks, line waver, discontinuous curves, and other imperfections.
2. Routed Copy: Free hand routing will not be approved. Routed letters shall be laser cut or done with the use of routing guides or patterns made to reproduce the specified typeface exactly. Corners of letters shall be hand filed sharp or to proper contour. Final routed signs shall be checked against approved lettering patterns by the Construction Manager. White translucent plex letters and or embedment panels shall be inset flush with face of sign, unless otherwise noted.
3. Screened Copy: Copy noted as "silk-screened" or "screen printed" shall be processed using fine mesh screens and screening inks. Apply one coat of clear linear polyurethane as a protective coat on painted surfaces. Surface of letters shall be uniform in color, finish and free of pin holes or other blemishes. Sign colors for both message and background colors shall match specified and approved samples in every respect. Sign colors shall be consistent in chroma, value and coverage to maintain proper opacity or translucency and shall be free of blistering, bleeding, fading and other imperfections. Sign color registration shall be crisp, sharp and free of imperfections.
4. Vinyl Copy Application: Surfaces of all sign items to receive vinyl copy shall be perfectly smooth and free of dust, grease, wax or other contaminates. Spacing of all copy shall be done according to approved samples utilizing pre-spaced application tapes.
5. Fiberglass Embedment Sheet: Embed message in FRP sheet and completely cover with thermosetting polyester resin. Embed message minimum 1/32 inch. Process sheets in one piece, in one process, to prevent delamination.
6. Messages: See drawings and graphics schedule for message content, type size, and color. Typeface: Helvetica Medium.

- D. Pressure Sensitive Letters: Provide thermal cut vinyl letters. Ensure that all edges and corners of finished letter-forms and graphics are true and clean. Do not use letterforms and graphics with rounded positive or negative corners, nicked, cut, or ragged edges. See drawings and graphics schedule for message content, type size, color, and typeface.
- E. Dimensional Letters: Fabricate letters as shown on drawings. See drawings and graphics schedule for message content, type size, color, and typeface.
 - 1. Mounting: Threaded studs at least 3/16 inch in diameter, secured in quick-setting mortar, for concealed anchorage. Project letters as shown on the drawings with stud spacer sleeves. Letters, stud, and sleeves shall be of the same material.

PART 3 - EXECUTION

3.1 INSPECTION

Inspect condition of locations and surfaces on which signs will be installed. Do not proceed with installation until defects or errors which would result in poor installation have been corrected. Organize a job walk after all signs are installed, with the Construction Manager, to inspect the installation.

A. Reconditioning of Surfaces:

- 1. Unpaved surfaces disturbed during the installation of signs shall be restored to their original elevation and condition. Sod and topsoil shall be preserved carefully and replaced after the backfilling is completed. Sod that is damaged shall be replaced by sod of quality equal to that removed. Where the surface is disturbed in a newly seeded area, the restored surface shall be re-seeded with the same quantity and formula of seed as that used in the original seedings.
- 2. Paved surfaces shall be repaired and restored to their original condition.

B. Locations of Signs: The locations shown on the plan drawings are for general information only. Arrange a meeting with the Construction Manager at the site for final location of sign elements. All signs shall be located with the use of numbered stakes tagged with correct item numbers.

3.2 INSTALLATION

Install signs at locations shown on drawings. Ensure that signs are installed plumb and true, at mounting heights indicated, and by method shown or specified.

A. Anchorage

Provide anchorage where necessary for fastening signs securely in place. Anchorage not otherwise specified or indicated shall include slotted inserts, expansion shields, and powder-driven fasteners when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; through bolts, lag bolts, and screws for wood. Provide slotted inserts of types required to engage with the anchors.

3.3 PROTECTION

Protect finished work from staining and corrosion as follows: Separate aluminum from direct contact with metals other than stainless steel, zinc, cadmium, or nickel bronze, by painting contact surfaces with zinc chromate primer and aluminum paint or with a coat of heavy-bodied bituminous paint or by non-absorptive tape or gasket. Paint exterior aluminum in contact with wood, concrete or masonry with zinc chromate primer and aluminum paint or heavy-bodied bituminous paint as specified in the paragraph entitled "Dissimilar Materials." Protect the work and adjacent work and materials against damage during progress of the work until completion. Wrap finished work with paper, polyethylene film, or strippable waterproof tape for shipment and storage and protect from damage during installation.

A. Design Rights: The limited right to fabricate designs is herein granted for the sole purpose of completing the Contract. The designs may not be manufactured, reproduced, exhibited or modified for any other purpose.

3.4 ADJUST AND CLEAN

Repair any damage to signs incurred during installation. Replace signs which cannot be repaired to new condition. Clean glass, frames, and other sign surfaces, and adjust hardware for proper operation.

3.5 PHASING

In the event phasing of installation is required, the Contractor and the Construction Manager shall agree on a delivery/staging area which is lockable.

3.6 QUALITY AND SPECIFIC REQUIREMENTS

Sign installation shall be carried out in a neat and proper manner equal to the finest quality standards of the industry.

A. Sign Mounting: For sign position on walls and doors, installer shall follow information on drawings.

B. Sign Locations: Location plans are provided to locate and identify all signage. Item numbers which are found in the graphic schedule identify specific signage units and their locations.

- C. **Installation:** Installed signs shall be clean, properly aligned, level and true to line and dimension, flush to surface or as detailed or specified, free of excess visible adhesive if used. Damage to sign or surrounding surfaces or other imperfections will not be approved.
- D. **Mechanical fasteners:** Where pin fastenings or other mechanical fasteners are used, adequate mounting shall be provided to prevent unauthorized removal of sign. All fastenings, structures and units shall be structurally sound and comply with all applicable code requirements and restrictions.
- E. **Cleanup:** All protective coatings and identifying stickers, paper, etc., shall be removed at the completion of the installation.
- F. **Repair of Damage:** Any damage to signs or surrounding surface shall be repaired or the item shall be replaced.
- G. **Vandal Proofing:** Permanently install signs using concealed fastening methods, vandal proof, which shall be shown or specified on the shop drawings.
- H. **Document Precedence:** Written dimensions on the drawings shall have precedence over scaled dimensions. The graphic schedule shall be followed for messages wording and references to the drawings. The specifications shall have precedence in quality over information noted on the drawings.
- I. **Quantity:** The quantity shown in the Graphic Schedule is approximate only. The Contractor shall be responsible for providing and installing all signage shown on the drawings.

3.7 CLEANING AND PROTECTION

At completion of installation, clean all surfaces in accordance with manufacturer's instructions. Protect units from damage until acceptance by the Construction Manager. Repair or replace damaged units as directed by Construction Manager.

- a. Check all items for correct placement.
- b. Clean, oil and polish as required by manufacturer's instructions.
- c. Remove all crating and debris from project and leave premises in clean condition.
- d. Take special precautions to protect finishes.
- e. Repair and repaint building surfaces which are damaged by workmen as a result of installation of sign items.

3.8 STORAGE

Provide for safe storage prior to the scheduled installation dates.

3.9 GUARANTEE

Provide a guarantee as required by the General Conditions.

END OF SECTION

PART B

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

PART "B"

GENERAL CONDITIONS

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TERMS AND CONDITIONS

1. DEFINITIONS

The more common definitions used in the Contract Documents are summarized as follows:

Definitions

- Acceptance:** Written documentation attesting to the act of an authorized representative of the Commission, by which all Work or a specified portion thereof, under the Contract has been identified as complete to the satisfaction of the Commission.
- Change Notice:** A document issued by the Engineer to the Contractor specifying a proposed change to the Contract and directing the Contractor to provide, at Contractor's expense, certain price and/or other information, which information will be furnished by Contractor within the time specified in the Notice. Unless otherwise expressly stated on the face of the Change Notice, a Change Notice is a proposal which may result in a Change Order.
- Change Order:** A written order issued to the Contractor by the Commission unilaterally modifying the Contract. The effective date of the Change Order shall be the issue date of said order.
- Commission:** The Los Angeles County Transportation Commission.
- Conformed Contract Documents:** True copies of the Procurement Documents and Contract Drawings revised to incorporate all changes made by addenda as well as true copies of fully executed Contract Amendments.
- Construction Manager (CM):** The Construction Management Consultant retained by the Commission to act as Construction Manager for the Project or its successor.
- Contract:** The written agreement executed by the Commission and the Contractor which sets forth the rights and obligations of the parties, including the Contract Documents.
- Contract Amendment:** A document that changes the Contract by alteration in the Specifications, delivery point, rate of delivery, contract period, price, or quantity, whether accomplished by Change Order or by mutual action of the parties to the Contract.

Contract Documents: The documents which collectively constitute the Contract, which may include:

- Contract Forms
- General Conditions
- Special Provisions
- Technical Provisions
- Contract Drawings
- Reference Drawings

Contract Drawings: The plans, profiles, typical cross-sections, general cross-sections, elevations, schedules and details which show location, character, dimensions, and details of the equipment, materials, or the Work.

Contract Milestone: An established event or occurrence that is associated with the contract schedule as defined in the Contract.

Contract Time: The number of calendar days, stated in the Contract Documents, allowed for completion of the Contract, including authorized time extensions. The date specified in the Notice To Proceed shall be the date on which the Contract Time begins.

Contracting Officer: An official of the Commission, authorized and empowered to execute contracts and agreements on behalf of the Commission.

Contractor: The individual, firm, partnership or corporation, or combination thereof, private, municipal or public, including joint ventures, which, as an independent contractor, has entered into this Contract with the Commission.

Days: Unless otherwise designated, days mean calendar days.

Engineer: The General Engineering Consultant retained by the Commission to provide engineering services for the Project or its successor. The Engineer is the Authorized Representative of the Commission to the extent expressly set forth in the Contract.

Equipment: A general term including vehicles, systems, assemblies, sub-assemblies, products, material, fittings, devices, appliances, fixtures, apparatus, supplies and the like used in the performance of a specific function or functions or Contract obligation.

Executive Director: The Executive Director of the Los Angeles County Transportation Commission.

Final Acceptance: The formal written acceptance by the Commission of the completed Work.

Furnishing: Manufacturing, fabricating, procuring and delivering to the designated site, equipment and materials required to perform the Contract.

General Engineering Consultant The Engineer.

General Terms: Directed, required, permitted, ordered, designated, selected, prescribed or words of like import shall be understood to mean the direction, requirement, permission, order, designation, selection or prescription of the Engineer. Approved, satisfactory, equal, necessary or words of like import shall be understood to mean approved by, acceptable to, satisfactory to, equal to, or necessary for in the opinion of the Engineer.

Indicated: A term meaning, "as shown on the Contract Drawings, as specified in the Specifications, or as required by the other Contract Documents".

Inspector: An authorized representative of the Engineer or the Commission assigned to make inspections and/or tests of the Equipment, Materials, or the Work performed or being furnished by the Contractor.

Materials: A general term including Equipment, Material, products, and articles incorporated in the Work.

Notice of Completion: Written notice from the Contractor specifying that the Work is fully completed as specified in the Contract.

Notice of Termination: Written notice from the Commission to the Contractor and its surety terminating the Contract completely or partially either for convenience of the Commission or for default due to the Contractor's failure to perform its contractual obligations.

Notice to Proceed (NTP): Written notice from the Commission to the Contractor of the date to proceed with the Work specified by the Contract Documents.

Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, instructions, warnings and other information

furnished by the Contractor to illustrate or explain the fabrication, assembly, installation, maintenance or operation of Materials, Equipment, or some portion of the Work.

Project Site: The right-of-way, tracks, maintenance facilities, and all other property of the Commission where Work will be performed under the Contract.

Provide: In reference to Work to be performed by the Contractor, provide means furnish and install complete in place.

Reference Drawings: Those drawings, other than the Contract Drawings, that are provided to the Contractor as part of the Bid Documents, for information which depict the major areas of system interface peculiar to the procurement.

Referenced Standards: Standards for Material, Equipment, Work, procedures or workmanship established by reference to standards or procedures published in a described reference text. Referenced Standards shall have the same force and effect as if they are physically incorporated in the Contract.

Right-of-Way: A term denoting land and property, and interests therein, acquired by the Commission.

Samples: Physical examples which illustrate Materials, Equipment, fixtures and workmanship which establish standards by which the Work may be judged providing the the Work is otherwise in conformity with the Contract.

Shop Drawings: Original drawings, diagrams, schedules and other data specifically prepared and submitted to the Engineer by the Contractor, any of its subcontractors or any lower tier subcontractor pursuant to the Work, showing in detail:

- (a) the proposed fabrication and assembly of structural elements;
- (b) the installation (form, fit, and attachment details) of Materials or Equipment.

Shop Drawings shall be deemed to include Product Data, literature, and performance and test data.

Special Provisions: Provisions specially applicable to this Contract, which invoke, modify and supplement the General

Conditions which are included in the Contract Documents.

Specifications: Specifications are Technical Provisions of the Contract.

Standard Drawings: Drawings part of or referenced in the Contract Documents, developed for use on the Contract to attain uniformity in Materials, geometrics, arrangements, Equipment, details and procedures and, in some instances, to express prior approval thereof be affected governmental agencies, utilities, railroads and pipeline companies.

State: The State of California.

Subcontractor: Any individual, partnership, firm, corporation, or joint venture who contracts with the Contractor to furnish services, labor, Equipment, or Materials under this Contract. As used herein, the terms subcontractor and supplier are synonymous.

Supplemental Agreement: A written contract amendment executed by the Commission and the Contractor.

Supplier: A subcontractor.

Surety: The corporate body bound with and for the Contractor, for the full and complete performance of the Contract and for the payment of all debts pertaining to the Work. When applying to the Bid Bond, it refers to the corporate body which acts as guarantor that the Bidder will enter into a contract with the Commission.

Technical Provisions: Those elements of the Contract that set forth the detail of the Work including design, performance, material, testing, methods of manufacture, and other requirements of the Contract. As used herein the terms Technical Provisions and Specifications are synonymous.

Ton: Two thousand pounds (avoirdupois)

Transit System: The complete fixed guideway rail transportation system, including right-of-way, pavement, tracks, structures, equipment, appurtenances and other property of the Commission.

Work: The furnishing of all Equipment, Materials, labor, tools and services necessary to the Contractor's performance of all duties and obligations imposed by the Contract, including any authorized changes thereto.

2. INTERPRETATION

- A. The individual documents comprising the Contract Documents are complementary and are intended to describe the Work. Anything mentioned in the Specifications and not shown on the Contract Drawings, or shown on the Contract Drawings and not mentioned in the Specifications, shall be of like effect as if shown or mentioned in both.
- B. Where "as indicated," "as detailed," or words of similar import are used, it shall be understood that the reference is made to the Specifications or Contract Drawings of this Contract unless otherwise stated.
- C. References to Articles include sub-articles under the Article referenced (for example, a reference to Article 8 is also a reference to 8A through 8E) and references to paragraphs similarly include references to sub-paragraphs.
- D. Referenced Standards: Material and workmanship specified by the number, symbol, or title of a Referenced Standard shall comply with the latest edition or revision thereof and amendments and supplements thereto. Municipal, utility and railroad Referenced Standards shall govern except in case of conflict with the Specifications. In case of a conflict between the Specifications and the Referenced Standard, the more stringent, as determined by the Commission, shall govern.
- E. Explanations: Should it appear that the Work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents, the Contractor shall apply to the Engineer for such further written explanations as may be necessary and shall conform to the explanation provided as part of the Contract.
- F. Differences Between Drawings: In case of differences between small and large scale drawings, the large scale drawings shall govern. In the event of discrepancy between any drawing and the figure written thereon, the figures shall govern over scaled dimension.
- G. Omissions and Misdemeanors: Before submitting its price and continuously thereafter, the Contractor shall carefully study and compare all drawings, Specifications and other Contract Documents; shall verify all figures on the Contract Drawings before laying out the Work; shall promptly notify the Engineer of all errors, inconsistencies, or omissions which it may discover; and obtain specific instructions in writing before proceeding with the Work. The Contractor shall not take advantage of any apparent error or omission which may be found in the Contract Drawings or Specifications, but the Engineer shall be entitled to make such corrections therein and

interpretations thereof as he may deem necessary for the fulfillment of their intent as provided in sub-article F above. The Contractor shall be liable to the Commission for all errors in the Work which could have been avoided by such examination and notification, and shall correct at its own expense and without extension of contract time, all Work improperly constructed through failure to notify the Engineer and to request specific instructions. Omission from the Contract Drawings or Specifications or the misdescription of details of Work which are manifestly necessary to carry out the intent of the Contract Drawings and Specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted work (no matter how extensive) or misdescribed details of the Work, and they shall be performed as if fully and correctly set forth and described in the Contract Drawings and Specifications at no additional expense or delay to the Commission.

- H. Severability: In the event any Article, sub-article, paragraph, sentence, clause or phrase contained in the Contract Documents shall be determined, declared or adjudged invalid, illegal, unconstitutional or otherwise unenforceable, such determination, declaration or adjudication shall in no matter affect the other Articles, sub-articles, paragraphs, sentences, clauses or phrases of the Contract Documents, which shall remain of full force and effect as if the Article, sub-article, paragraph, sentence, clause or phrase declared, determined or adjudged invalid, illegal, unconstitutional or otherwise unenforceable was not originally contained in the Contract Documents.
- I. Headings: The various headings contained in the Contract Documents are inserted for convenience only and shall not affect the meaning or interpretation of the Contract or any provision thereof.

3. PRECEDENCE OF CONTRACT DOCUMENTS

Subject to the provisions of the Article entitled INTERPRETATION any inconsistency in requirements of the documents shall be resolved by giving precedence in the following order:

- A. Contract Amendments
- B. Executed Contract Agreement
- C. Special Provisions

- D. General Conditions
- E. Compensation and Payment Provisions
- F. Technical Provisions
- G. Contract Drawings
- H. Referenced Standards

4. **CONTRACTUAL RELATIONSHIPS**

Nothing contained in the contract is intended to or shall have the effect of creating any rights in any third party against the Commission. The inclusion of the Contract or any part thereof in any other document shall not be deemed to be incorporating any obligation, duty, or liability on the part of the Commission. The Contractor shall indemnify the Commission against any claim made by any third party claiming rights under the Contract in accordance with the provisions of the Article entitled LIABILITY AND INDEMNIFICATION.

5. **POWERS TO BE EXECUTED BY THE CONTRACTING OFFICER AND THE ENGINEER**

- A. The Commission has the final authority in all matters relating to and affecting the Work. Except as expressly provided in the Contract, the Contracting Officer may exercise any powers, rights or privileges which may be exercised by the Commission.
- B. The Contracting Officer has delegated certain powers and duties in connection with the Contract to the Engineer. Within the scope of this delegation, and as may be additionally authorized in writing by the Commission through the Contracting Officer, the Engineer is the authorized representative of the Contracting Officer. The Engineer's powers are limited to the following:
 - 1. The Engineer shall have general supervisory authority over the Work and the Contractor, and the authority to enforce compliance with the Contract. The exercise of or failure to exercise such authority shall not relieve the Contractor of any of its obligations under the Contract;
 - 2. The Engineer shall have the power to suspend the Work or any part thereof by giving notice to the Contractor in writing. Such written notice shall set forth the period of time for which the Work or any part thereof shall be suspended and the basis for such suspension. Notwithstanding the foregoing, the Engineer shall suspend the Work or any part thereof only when it has reasonable cause to believe that such suspension is necessitated by the failure of the Contractor to perform its Work in

accordance with the Contract or that failure to suspend would have an adverse impact on the Project or result in damage to the Commission;

3. The Engineer, subject to the review and approval of the Contracting Officer shall negotiate with the Contractor all adjustments of Contract price and/or time;
 4. The Engineer shall prepare cost and time estimates for Contract Amendments not initiated by the Contractor and shall review and comment upon estimates for Contract Amendments prepared and initiated by the Contractor. Subject to any express limitations, the Engineer shall have authority to modify the Contract in accordance with the Article entitled CHANGES. Such authority shall not extend to modifications of contract time;
 5. The Engineer shall review payment applications for Work performed by the Contractor and shall approve the same for payment and submit the applications for the concurrence of the Contracting Officer;
 6. Review and approval of the Contractor's progress schedule;
 7. Inspection and testing of the Work; and
 8. The Engineer shall have the authority to enforce the requirements of the Commission Safety Manager and any other safety requirements relating to the Work.
- C. In addition to the foregoing, the Engineer shall have those rights and powers expressly set forth in other sections of the Contract. The powers and rights of the Engineer as authorized representative of the Contracting Officer shall not include any right or power specifically reserved for the Commission and/or the Contracting Officer under the Contract. Any power which may be exercised by the Engineer may also be exercised, on a superior basis, by the Contracting Officer. At the time of Contract Award, the Engineer will advise the Contractor regarding the authority level of the Engineer's personnel assigned to this Contract.

6. CONTRACTOR'S PROJECT MANAGER

The Contractor's approved Project Manager (PM) shall devote full time to the project until all program plans, shop drawings and schedules have been submitted and approved by the Commission. Should the Contractor later wish to reduce the level of PM effort to part-time, it may do so only with prior written approval of the Commission. The PM shall not be reassigned from the project without written concurrence of the Commission.

7. **PERFORMANCE BOND**

The contractor's performance bond shall remain in force until all warranty obligations are completed, but the amount of bond may be reduced to 10 percent of the Total Contract Price after Final Acceptance.

8. **NOTICE TO PROCEED**

The Commission will issue a Notice to Proceed (NTP) after Execution of the Contract. The Contractor is not authorized to perform Work under the Contract prior to receiving the NTP. Upon receipt of the NTP, the Contractor shall commence the Work and shall diligently prosecute the Work to completion in accordance with the time and schedule requirements specified in the Contract.

9. **DOCUMENTATION**

- A. All correspondence, documentation, and Project Data transmitted to the Commission shall be in the English language.
- B. Unless stated otherwise in the Contract Documents, the Commission will respond to all correspondence submitted for Commission action within 30 days of the date the correspondence is received by the Commission if the Contractor submits its documentation in accordance with the dates for submittals shown in the approved schedule.
- C. Should the Contractor make its submittals at a rate that differs from the schedule, the Commission will use its best efforts to respond within 30 days. If the Commission does not respond within that period; however, the Contractor shall not be entitled to any extensions of time.

10. **WARRANTY OF WORK**

- A. The Contractor warrants that all Work under the Contract shall be of good quality and free from any defective or faulty Materials, Equipment, Work or workmanship.
- B. The Contractor agrees that for a period of one year (or such longer period of time as may be specified elsewhere in the Contract or in any guarantee or warranty provided by any manufacturer or supplier of Equipment or Materials incorporated into the Work) after the date of Final Acceptance, it shall within 48 hours after being notified in writing by the Commission or Engineer of any defect in the Work or non-conformance of the Work to the Contract commence and prosecute with due diligence all Work, including, without limitation, redesign, repair, or replacement, necessary to fulfill the terms of the warranty at its sole cost and expense.

- C. The Contractor, at its sole cost and expense, shall also restore, repair, or replace damage to Equipment, Materials, the Work, work of other Contractors, buildings, the contents thereof, or any other property of the Commission which is the result of any failure or defect in the Work.
- D. All warranties and guarantees of Subcontractors, suppliers and manufacturers with respect to any portion of the Work, whether express or implied, are deemed to be obtained by the Contractor for the benefit of the Commission regardless of whether or not such warranties and guarantees have been transferred or assigned to the Commission by separate agreement. The Contractor shall enforce such warranties and guarantees on behalf of the Commission; provided, however, that if directed by the Commission, the Contractor shall require such Subcontractors, manufacturers and suppliers to execute such warranties and guarantees directly to the Commission. The Contractor shall be jointly and severally liable for any such warranties or guarantees. To the extent that any such warranty or guaranty would be voided by reason of the Contractor's negligence in incorporating Material or Equipment into the Work, the Contractor shall be responsible for correcting such defect.
- E. In the event that the Contractor fails to perform its obligations under this Article (or under any other warranty or guaranty under this Contract) to the reasonable satisfaction of the Commission, the Commission shall have the right to correct and replace any defective or non-conforming Work at the Contractor's sole expense. The Contractor shall be obligated to fully reimburse the Commission for any expenses incurred hereunder upon demand.
- F. The Contractor shall perform such tests as the Commission may require to verify that such corrective actions, including, without limitation, redesign, repairs, and replacements comply with the requirements of the Contract. All costs associated with such corrective actions and testing, including the removal, replacement, and reinstatement of Equipment and Materials necessary to gain access, shall be borne by Contractor. The Contractor warrants such redesigned, repaired, or replaced Work against defective design, materials, and workmanship for the remainder of the warranty period or a period of one year from and after the date of acceptance thereof, whichever occurs later.
- G. Commission-owned spare parts will not be used for warranty purposes. The Contractor shall maintain a sufficient quantity of replacement parts on hand at or near the Commission repair facility to repair warrantable failures and defects. The security, control, shipping, and disposition of Contractor-owned parts shall be the responsibility of the Contractor.

- H. Contractor personnel will be entitled to use Commission facilities and special equipment to perform warranty work, provided that such work is conducted during normal hours, does not interfere with other Commission activities, and is performed in accordance with Commission policies and directions. Damages to Commission property caused by Contractor representatives shall be the sole responsibility of the Contractor, and shall be corrected at the Contractor's expense as provided in this Article.
- I. The rights and remedies of the Commission provided in this Article are in addition to and do not limit any rights and remedies afforded by the Contract or by law.
- J. Nothing in the above intends or implies that this warranty shall apply to Work which has been abused or neglected by the Commission to whom ownership has been transferred.
- K. The Surety for the Contractor shall be jointly and severally liable under its Performance Bond to the Commission in the event that the Contractor is in breach of its warranty obligations hereunder.
- L. Notwithstanding the foregoing, in the event of an emergency constituting an immediate hazard to the health or safety of the Public, Commission employees, its property or that of its licensee, the Commission may undertake at the Contractor's expense and without prior notice, all work necessary to correct such hazardous condition when it was caused by Work of the Contractor not being in accordance with requirements of this Contract.

11. PAYMENT TO SUBCONTRACTORS

- A. The Contractor shall pay its subcontractors for and on account of Work performed by such subcontractors in accordance with the terms of their respective subcontracts.
- B. Before the Contractor can receive any payment, except the first payment, for monies due as a result of a percentage of the Work completed, it must provide the Engineer with duly executed affidavits or releases of lien from all subcontractors who have performed any Work on the project as of the date, stating that said subcontractors have been paid their proportionate share of all previous payments. The failure of the Contractor to provide the foregoing affidavits or releases of lien shall result in the Commission withholding the amount in dispute until said dispute is resolved.

12.

FINAL INSPECTION AND ACCEPTANCE OF THE WORK

- A. Final Inspection: When the Contractor notifies the Engineer in writing that the Work has been completed, the Commission and Engineer will make the final inspection for the purpose of ascertaining that the Work has been fully completed in accordance with all of the requirements of the Contract.
- B. Acceptance of the Work: When the Commission has made the final inspection and has determined that the Work has been completed in accordance with the Contract, including all required submittals, the Commission will accept the Work. Immediately upon and after Final Acceptance, the Contractor will be relieved of any further duty of maintaining and protecting the Work as a whole, and the Contractor will be relieved of its responsibility for injury to persons or property or damage to the Work which occurs after Final Acceptance, except that the Contractor will not be relieved of its responsibility for injury to persons or property arising from its duties and obligation under the Article entitled LIABILITY AND INDEMNIFICATION and its obligations under the Article entitled WARRANTY OF WORK.
- C. Final Acceptance shall be final and conclusive, and no further performance of Work shall be required except as regards latent defects, fraud (including but not limited to defects and deficiencies which the Contractor or any of its employees, agents or subcontractors had reason to know of and which were not disclosed to the Contracting Officer or the Engineer in writing) or such gross mistakes as may amount to fraud, or as regards the Commission's rights under any warranty or guarantee.
- D. If the Commission rejects the notice of completion and specifies defective or uncompleted portions of the Work, the Contractor shall promptly remedy such defective and uncompleted portions of the Work. Thereafter the Contractor shall again give the Commission a written notice of completion of the Work. The foregoing procedure shall apply again and successively thereafter until the Commission has given the Contractor Final Acceptance of the Work.

13.

CHANGES

- A. The Commission may, at any time, without notice to the sureties, by written notice or order to the Contractor designated as a Change Notice or Change Order, make any change in the Work within the general scope of the Contract, including but not limited to changes:
 - 1. In the Contract (including specifications, drawings and designs);

2. In the method or manner of performance of the Work;
 3. In Commission-furnished facilities, Equipment, Materials, services;
 4. Directing acceleration in performance of the Work; or
 5. Value Engineering Changes.
- B. Any other order from the Engineer or Contracting Officer which causes any change will be treated as a Change Notice under this Article, provided that the Contractor gives the Engineer written notice stating the date, circumstances and source of the order, and that the Contractor regards the order as a Change Notice. Nothing in this sub-article B will be construed to bind the Commission for acts of its employees and agents exceeding the delegation of authority under the Article entitled POWERS TO BE EXECUTED BY THE CONTRACTING OFFICER AND THE ENGINEER of these General Conditions. The Contractor shall promptly notify the Engineer when it receives direction, instruction, interpretation or determination from any source which may cause any change in the Work. Such written notification shall be given to the Engineer before the Contractor acts on said direction, instruction, interpretation or determination.

In giving instructions, the Engineer shall have authority to make changes in the Work not involving extra cost when such changes are in its opinion necessary or expedient to the satisfactory performance and completion of the Work.

- C. Except as herein expressly provided, no order, statement, or conduct of the Engineer, the Contracting Officer or any other person shall be treated as a change under the Contract or entitle the Contractor to any adjustment under the Contract.
- D. If any change under this Article causes an increase or decrease in the Contractor's cost of, or the time required for the performance of any part of the Work under the Contract, an adjustment will be made and the Contract modified accordingly by a written Change Order; provided, however, that except for claims based on errors in the Contract Documents, no claim for change under sub-article B of this Article will be allowed for costs and additional time incurred more than 20 days before the Contractor gives written notice as herein required; and provided that in the case of errors in the Contract Documents for which the Commission is responsible, the adjustment will include increased cost incurred by the Contractor in attempting to comply with such errors in the Contract Documents which are set forth in sub-article G, Omissions and Misdescriptions, of the Article entitled INTERPRETATION.
- E. If the Contractor intends to submit a request for an adjustment under this Article, it shall, within 30 days after receipt of a

written Change Notice or Change Order under sub-article A of this Article or the furnishing of a written notice under sub-article B of this Article, submit to the Engineer a written statement setting forth the general nature and monetary extent of such claim, including the impact costs of such change, unless this period is extended in writing by the Contracting Officer. The statement of claim hereunder may be included in the notice under sub-article B of this Article.

- F. Change Orders: A written order implementing changes in the Work for which a total cost has been negotiated prior to the issuance of the order is called a CHANGE ORDER. It is issued by the Commission with the approval required and expressly indicates the intention to treat the items described therein as changes in the Work. It shall also contain the terms and amount of adjustment to the Contract Price. A CHANGE ORDER must be issued and executed before any work is started on the items covered by the Order.
- G. The Engineer and the Contractor (on his own behalf and on behalf of his Subcontractors) shall endeavor to negotiate a reasonable Contract Price and the Contractor will be required to submit a detailed price proposal supported with sufficient documentation such that (1) the Engineer can determine that the proposal reflects all impacts on the Contract from work additions, deletions and modifications shown in the Change Notice being priced (2) the proposed prices are set out in such a way that a fair evaluation can be made. (3) Contract provisions relating to Contract changes costing over \$100,000 are complied with. If any prices or other aspects are conditional, such as on firm orders being made by a certain date or the occurrence or non-occurrence of an event, the Contractor shall identify these aspects in his proposal. A negotiated Change Order shall set out prices, scheduling requirements, time extensions and all costs of any nature arising out of the issuance of a Change Notice except for those cost and time aspects explicitly reserved on the face of the Change Order. Except for these explicit reservations, the execution of a Change Order by both parties will be deemed accord and satisfaction of all claims of any nature arising from or relating to the issuance of the Change Notice and Change Order negotiated. For administrative purposes of the Commission, estimates of quantity changes and resulting price changes for payments made under Contract price items on account of a change will be listed in the written Change Order.
- H. In the event that the Contractor and the Commission are unable to agree:
1. That a change has occurred which should result in an adjustment of Contract price and/or Contract Time; or

2. On the amount of any adjustment to be made to the Contract price and/or Contract Time,

The Engineer may order the Contractor to proceed with the performance of the Work in question. Such Work will, at the Commission's option, be paid for;

1. Under a Time and Materials or Cost-Plus Work Directive Change basis pursuant to subarticle I, of this Article;
2. Pursuant to a Unilateral Change Order issued by the Commission which may provide for payment to the Contractor on a lump sum, unit price or other basis;
3. Under the terms of a Change Order subsequently negotiated and entered into; or
4. If the Contractor and Commission disagree as to whether a change has occurred, pursuant to a Disputed Change Order which shall not provide for any adjustment to Contract price or Contract Time, but which shall require Contractor to keep records for any claimed additional costs on the Cost-Plus time and materials basis as is set forth in sub-article I hereof.

The Contractor when so ordered shall proceed with the Work and shall not bring any claim on account thereof. The issuance of a Disputed Change Order by the Commission shall not imply that the Contractor is entitled to any additional compensation or time for the work therein designated, but rather said Disputed Change Order shall be processed pursuant to the Article entitled DISPUTES of these General Conditions.

I. Work Directive Changes:

1. If it is impossible or impractical to ascertain the total cost of changes in the Work to be done before such Work is begun, or if no agreement can be reached on changes in the Work and additions to the Contract price, or if a situation involving changes in the Work which, if not processed expeditiously, might delay the project, then the Commission may issue a Work Directive Change instructing the Contractor to do the Work, indicating expressly the intention to treat the items as changes in the Work and setting forth the kind, character, and limits of the Work as far as can be ascertained, the terms under which any changes to the Contract price will be determined and the estimated total change in Contract Schedule anticipated thereunder. The Work Directive Change shall be fully executed by the Commission and accepted by the Contractor before any Work is started on the items covered by the order. Such Work Directive Change will become the basis for a Change Order as outlined herein when the amount of adjustment to the Contract Price and/or Schedule can be

determined. The prior approval of the Work Directive Change will be sufficient authority for the Change Order within the limits of the estimated change in Contract Price. Without additional authority, no costs exceeding the estimated amount will be paid.

2. The Contractor shall maintain such records as the Commission deems sufficient to distinguish the direct cost of other operations. He shall furnish daily, on forms approved by the Engineer, reports of cost-plus or time and materials work. The reports shall itemize all costs for labor, materials, and equipment rental and give total of costs to date for the Work. For workers, the reports shall include hours worked, rates of pay, names and classifications. For equipment, the reports shall include size, type, identification number, rental rate, and hours of operation. All records and reports shall be made immediately available to the Engineer upon his request. The cost of furnishing such reports shall be included in Contractor's overhead and fee percentages.
3. All cost reports shall be signed by the Contractor or his representative and signed by the Engineer. The Engineer will compare its records with the Contractor's reports, make the necessary adjustments and compile the costs of the Work. When such reports are agreed upon and signed by both parties, they will become the basis of payment.
4. Materials cost shall be the cost of all materials purchased by the Contractor and used in the Work and shall be the actual cost of such materials, including sales taxes, freight, and delivery charges. The Engineer reserves the right to approve materials and sources of supply of materials furnished by the Contractor, or if necessary to facilitate the progress of the Work, to furnish the materials to the Contractor.
5. Materials, equipment rental, and other costs shall be substantiated by vendors' invoices submitted with the current reports; or, if not then available, shall be submitted with subsequent report. If vendors' invoices are not submitted within 30 days after completion of the Work, or if in the opinion of the Engineer the cost of materials is excessive, then the cost of such items shall be deemed to be the lowest current wholesale prices at which the items are available in the quantities required, less cash or trade discounts.
6. Labor costs shall be based on the prevailing wages scale for each craft or type of workman. Cost of payroll taxes and insurance, health and welfare, pension and vacation are allowable. While no percentage will be allowed thereon for overhead or profit, Contractor's fee will be allowed on such items in any Subcontractor's proposal.

7. Allowances not to exceed the following percentage fees for the party performing the Work based upon the cost of labor, material, and use of equipment required to perform the Work:
 - (a) 10 percent overhead and 10 percent profit on the first \$20,000;
 - (b) 7-1/2 percent overhead and 7-1/2 percent profit on the next \$30,000;
 - (c) 5 percent overhead and 5 percent profit on the balance over \$50,000.

No percentage fees will be paid to the Contractor for any material furnished by the Commission. Where the Contractor's or Subcontractor's portions of a change involve credit items, the party performing the Work shall deduct such items prior to adding overhead and profit.

- J. For Contract changes, the Commission, or its respective representative shall have the audit and inspection rights as described below:
 1. Where the agreed payment method for any Contract change is to be by cost reimbursement, time and material, labor hours or any combination thereof, the Contractor shall maintain and the Commission or its respective representatives shall have the right to examine books, records, documents, and other evidence and accounting principles and practices sufficient to reflect properly all direct and indirect costs of whatever nature claimed to have been incurred and anticipated to be incurred for the performance of the Contract changes under this subarticle.
 2. Contract changes exceeding \$100,000 in cost: For cost and pricing data submitted in connection with pricing a Contract Amendment referred to in this subarticle, unless such pricing is based on Contract unit prices, adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the public, or prices set by law or regulation, the Commission or its representatives have the right to examine all books, records, documents and other data of the Contractor related to the negotiation of or performance under the Contract of Change Orders for the purpose of evaluating the accuracy, completeness and currency of the cost or pricing data submitted. The right of examination shall extend to all documents deemed necessary by such entity or persons to permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used therein.

3. Contract changes exceeding \$10,000 but not \$100,000 in cost: The Commission or its representatives prior to the execution of any Contract Change Order in this subarticle or for a period of twelve months after the execution shall, unless such pricing is based on Contract unit prices, adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the public, or prices set by law or regulation, have the right to examine all books, records, documents and other data of the Contractor relating to the negotiation of or performance under the Contract of Change Orders for the purpose of evaluating the accuracy, completeness and currency of the cost or pricing data it submitted upon which negotiation is or has been based. To the extent the examination reveals inaccurate, incomplete or noncurrent data, the Contracting Officer may renegotiate the Contract Change Order price based on such data.
4. Contract changes of less than \$10,000 in cost: The Contracting Officer may require from the Contractor appropriate documentation to support the prices being negotiated for contract changes under this subarticle, and may refuse to complete negotiations until satisfactory documentation is submitted. Once a Contract Change Order is executed, the Contracting Officer and his representative may inspect the Contractor's records only with the Contractor's consent.
5. Availability: The materials described above shall be available at the office of the Contractor at all reasonable times for inspection, audit or reproduction until three years from the date of Final Payment under this Contract and for records which relate to the Article entitled DISPUTES, or litigation or the settlement of claims arising out of the negotiation or the performance of Contract changes over \$100,000, records shall be made available until such litigations or claims have been disposed of.
6. The Contractor shall insert a clause containing all the provisions in this Article, in all subcontracts hereunder except altered as necessary for proper identification of the contracting parties and Contracting Officer.
7. For the purposes of determining the total cost of a change as provided in this Article, total costs shall include liquidated damages which would be assessed if extension(s) of time were not granted by Contract Change Order.
8. The requirements of this audits and records article are in addition to other audit, inspection and recordkeeping provisions elsewhere in the Contract documents.

K. Changes involving aggregate increases and decreases in excess of \$100,000 shall be subject to the following:

1. A change involves aggregate increases and decreases in excess of \$100,000, if the total value of Work affected, without regard to the arithmetic sign, exceeds \$100,000; for example, a Change Order adding work in the amount of \$75,000 and deleting work in the amount of \$50,000 will be considered to involve aggregate increases and decreases of \$125,000.
2. In addition to requirements for Change Order proposals of this Article, the Contractor shall submit other data supporting his proposal. Submittals under this Article shall be collectively designated "cost or pricing data". The Contractor shall submit a certificate of cost or pricing data as soon as possible after agreement is reached on the Contract price adjustment in the following format:

CERTIFICATE OF CURRENT COST OR PRICING DATA

This is to certify that, to the best of my knowledge and belief, the cost or pricing data submitted, either actually or by specific identification in writing, to the Commission or to the Commission's representative in support of _____* are accurate, complete, and current as of _____**. This certification includes the cost or pricing data supporting any advance agreements and forward pricing rate agreements between the offeror and the Commission that are part of the proposal.

Firm _____
Name _____
Title _____
Date of Execution*** _____

* Identify the proposal, quotation or change order request for price adjustment, or other submission involved, giving the appropriate identifying number (e.g., C.O. No).

** Insert the date, month, and year when price negotiations were concluded and price agreement was reached.

*** Insert the day, month, and year of signing, which should be as close as practicable to the date when the price negotiations were concluded and the contract price was agreed to.

3. The Contractor shall submit in support of all items not based upon unit prices or lump sum prices contained in the Contract or upon the established prices at which commercial items are sold in substantial quantities to the public,

statements by his vendors that the prices charged to the Contractor are not greater than the prices charged by the respective vendors to their most favored customers for the same items in similar quantities.

4. Price reductions for Defective Cost or Pricing Data - Pricing Adjustments: If any price, including profit and fee, negotiated in connection with any price adjustment was increased by any significant sums because:
 - (a) The Contractor furnished cost or pricing data which were not complete, accurate, and current as certified in the Contractor's Certificate of Current Cost or Pricing Data;
 - (b) A Subcontractor, pursuant to subarticle G of this Article, or any subcontract provision therein required, furnished cost or pricing data which were not complete, accurate and current as certified in the Subcontractor's Certificate of Current Cost or Pricing Data;
 - (c) The Subcontractor or his prospective Subcontractor furnished cost or pricing data which were required to be complete, accurate, and current and to be submitted to support a subcontract cost estimate furnished by the Contractor but which were not complete, accurate, and current as of the date certified in the Contractor's Certificate of Current Cost or Pricing Data; or
 - (d) The Contractor or a Subcontractor or his prospective Subcontractor furnished any data, not within clauses 4(a), 4(b), or 4(c) above, which were not complete, accurate, and current as submitted; the price shall be reduced accordingly and the Contract shall be modified in writing as may be necessary to reflect such reduction. Any reduction in the Contract price due to defective Subcontract data of a prospective Subcontractor, when the Subcontract was not subsequently awarded to such Subcontractor, will be limited to the amount (plus applicable overhead and profit markup) by which the actual Subcontract, or actual cost to the Contractor if there was no Subcontract, was less than the prospective Subcontract cost estimate submitted by the Contractor, provided the actual Subcontract price was not affected by defective cost or pricing data.

14. **INCREASED OR DECREASED QUANTITIES**

- A. This Article only applies to unit prices contained in this Contract as shown on the Bid Pricing Schedules and controls payments or credits for variations between estimated quantities and actual quantities required to complete the Work. Increases or decreases will be determined by comparing the actual quantity required to the Estimated Quantities in the Bid Pricing Schedules.
- B. Where the quantity of a pay item in this Contract is an estimated quantity and where the actual quantity of such pay item varies more than 25 percent above or below the estimated quantity stated in this Contract, an equitable adjustment in the Contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in cost due only to the variation above 125 percent or below 75 percent of the estimated quantity.
- C. No compensation will be made in any case for loss of anticipatory profits or consequential damages.
- D. This Article will apply to the Commission initiated additions to or deletions from the Work: even though the additions or deletions may be distinct or separate; and regardless of the fact that the additions or deletions are a result of a design change or any other cause.

15. **EXTENSION OF TIME**

- A. In addition to the provisions stated in the Article entitled **SUSPENSION OF WORK**, the Contractor will be granted an extension of time for any portion of the delay in completion of the Work, performed under the latest approved schedule, arising from acts of God, acts of governments, acts of the public enemy, fires, floods, epidemics, quarantine restriction, freight embargoes, or strikes, provided that the aforesaid causes were not foreseeable and did not result from the fault or negligence of the Contractor, and provided further that the Contractor has taken reasonable precautions to prevent further delays owing to such causes, and has notified the Engineer in writing of the cause or causes of delay within five days from the beginning of any such delay.
- B. Within 30 days after the end of delay, the Contractor shall furnish the Commission with detailed information concerning the causes and circumstances of the delay, the number of days actually delayed, the appropriate Contract references, and the measures taken to prevent or minimize the delay. Failure to submit all such information within the 30-day period will be sufficient cause for denying the claims for an extension of time. The Commission will ascertain the facts and the extent of the delay and its findings thereon will be final and conclusive

subject to provisions of the Article entitled DISPUTES. Neither a delay nor an extension of time granted pursuant to this Article shall be the basis of a claim for additional compensation or damages, and no damages or costs of any kind or nature will be paid for any delay or extension of time. Time extensions must be approved by the Commission prior to any interim or final completion dates being extended.

- C. An extension of time will not be granted for a delay caused by a shortage or Materials, except Commission-furnished Materials, unless the Contractor furnished to the Engineer documented proof that it has made every effort to obtain such Materials from every known source. The Contractor shall also submit proof, in the form of network analysis data, that the inability to obtain such Materials when originally planned, did in fact cause a delay in final completion of the Work which could not be compensated for by revising the sequence of its operations. Only the physical shortage of Material will be considered under these provisions as a cause for extension of time. No consideration will be given to any claim that Material could not be obtained at a reasonable, practical, or economical cost, unless it is shown to the satisfaction of the Engineer that such Material could have been obtained only at exorbitant prices, entirely inconsistent with current rates taking into account the quantities involved and the usual practices in obtaining such quantities and that such fact could not have been known or anticipated at the time the Contract was entered into.
- D. No extension of time will be granted under this Article for any delay to the extent: (1) that performance would have been so delayed by any Contractor induced causes, including but not limited to the fault or negligence of the Contractor or its Subcontractors; or (2) for which any remedy is provided for or excluded by any other provision of the Contract.
- E. A Change Order will be issued to the Contractor within a reasonable period of time after approval of a request for extension of time, specifying the number of days allowed, if any, and the new date for completion of the Work or specified portions of the Work.
- F. An extension of time granted shall not release the Contractor's surety from its obligations. Work shall continue and be carried on in accordance with all the provisions of the Contract and said Contract shall be and shall remain in full force and effect during the continuance and until the completion and Final Acceptance of the Work covered by the Contract unless formally suspended or annulled in accordance with the terms of the Contract.
- G. Neither the grant of an extension of time beyond the date fixed for the completion of any part of the Work, nor the performance and acceptance of any part of the Work or Materials specified by the Contract after the time specified for the completion of the

Work, shall be deemed to be a waiver by the Commission of the Commission's right to abrogate this Contract for abandonment or failure to complete within the time specified or to impose and deduct damages as may be provided.

16. **VALUE ENGINEERING**

- A. The Commission encourages the Contractor to submit Value Engineering Change Proposals (VECPS) in order to avail the Commission of potential cost savings. The Contractor and the Commission will share any savings in accordance with this Article. The Contractor is encouraged to submit VECPS whenever it identifies potential savings or improvements.
- B. This Article applies to a Contractor-developed and documented VECP which:
 - 1. Requires a change to this Contract to implement the VECP; and
 - 2. Reduces the Contract amount without impairing essential functions or characteristics of the Work, provided that it is not based solely upon a change in specified quantities.
- C. As a minimum, the following information shall be submitted by Contractor with each VECP:
 - 1. Description of the existing Contract requirements which are involved in the proposed change;
 - 2. Description of the proposed change;
 - 3. Discussion of differences between existing requirements and the proposed change, together with advantages and disadvantages of each changed item;
 - 4. Itemization of the Contract requirements which must be changed if the VECP is accepted (e.g., drawing numbers and Specifications);
 - 5. Justification for changes in function or characteristics for each affected item, and effect of the change on the performance of the end items;
 - 6. Date or time by which a Change Order adopting the VECP must be issued in order to obtain the maximum cost reduction, noting any effect on Contract completion time or delivery schedule; and
 - 7. Cost estimate for existing Contract requirements correlated to Contractor's unit price or lump sum breakdown and the proposed changes in those requirements. Costs of

development and implementation by the Contractor shall be identified.

- D. The Contractor shall submit VECPs directly to the Engineer. The Commission will process proposals expeditiously, but shall not be liable for any delay in acting upon any proposal submitted pursuant to this Article. The Contractor may withdraw all or part of any VECP at any time prior to acceptance by the Commission, but shall be liable for costs incurred by the Commission in reviewing the proposal.
- E. The Commission may accept, in whole or in part, by Change Order, any VECP submitted pursuant to this Article. Designs for accepted VECP's will be prepared by the Commission for incorporation into the drawings and specifications. Until a Change Order is issued on a VECP, Contractor shall remain obligated to perform in accordance with this Contract. The decision of the Commission as to rejection or acceptance of any VECP shall be at the sole discretion of the Commission and shall be final and not subject to the Article entitled DISPUTES.
- F. If a VECP submitted by the Contractor pursuant to this sub-article is accepted, the Contract price shall be adjusted in accordance with the following provisions:

1. Definitions:

- (a) Estimated gross savings to the Contractor (GS) means the difference between the cost of performing the Work according to the existing requirement and the cost to perform it according to the proposed change. In each instance, Contractor's profit shall not be considered part of the cost.
- (b) Contractor costs (CC) means reasonable costs incurred by Contractor in preparing the VECP and making the change, such as cancellation or restocking charges.
- (c) Estimated net savings to Contractor (NS) means gross savings (GS) less Contractor costs (CC).
- (d) The Commission's Costs means reasonable costs as determined by the Commission which are incurred for evaluating and implementing the VECP, such as testing, redesign, and effect on other contracts.
- (e) The Contractor is not entitled to share in either collateral or future contract savings. Collateral savings are those measurable net reductions in the Commission's costs of operation resulting from the Value Engineering Proposal to include maintenance, logistics and Commission furnished property. Future contract savings cover the reductions in the cost of performance of future construction contracts for

essentially the same item resulting from a VECP submitted by the Contractor.

2. Calculations:

The Contract price shall be reduced by an amount equal to fifty percent (50%) of (NS) plus one hundred percent (100%) of the Commission's costs, expressed by the formula:

Reduction = 0.5 (NS) + 1.0 (Commission cost)
In no case shall the reduction exceed NS.

3. Contractor's profit shall not be reduced by application of the VECP.

G. Contractor shall include appropriate value engineering incentive provisions in all subcontracts of \$25,000.00 or greater, and may include those provisions in any Subcontract. Subcontracts shall provide that any benefits accruing to Contractor as a result of an accepted VECP initiated by a Subcontractor shall be shared by Contractor and the Subcontractor in a manner provided for in the contract between them. To compute any adjustment in the Contract amount under subparagraph F above, Contractor's costs of preparation and change of a VECP shall include any preparation and change costs, such as cancellation or restocking charges. Concurrent contract savings on other Commission contracts where the subcontractor is participating are not allowable.

H. The Contractor may, within the limits stated in the Article entitled PUBLIC RECORDS ACT, restrict the Commission's right to use any sheet of a VECP or of the supporting data submitted pursuant to this paragraph in accordance with the terms of the following legend, if the legend is marked on the sheet.

"Data furnished pursuant to the VALUE ENGINEERING Article of the Contract shall not be disclosed to any outside person or agency, or duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a VECP submitted under said Article. This restriction does not limit the Commission's right to use information contained in this VECP if it is or has been obtained, or is otherwise available, from Contractor or from another source without limitations. If a VECP is accepted by the Commission after the use of the data in an evaluation, the Commission may duplicate, use, and disclose any data reasonably necessary to the full utilization of the VECP, as accepted, in any manner and for any purpose whatsoever, and may allow others to do so."

17. SUSPENSION OF WORK

- A. The Commission may order the Contractor in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as the Commission may determine to be appropriate for its convenience.
- B. If the performance of all or any part of the Work is suspended, delayed or interrupted beyond a reasonable period of time by the Contracting Officer or the Engineer pursuant to a written order as provided above, an adjustment shall be made for any increase in cost of performance of the Contract actually and necessarily caused by such delay, suspension or interruption to the extent that the same was not reasonable, and the Contract modified in writing accordingly. However, no adjustment shall be made under this Article for any suspension, delay or interruption to the extent: (1) that performance would have been so suspended, delayed or interrupted by any other cause, including but not limited to the fault or negligence of the Contractor; or (2) for which any adjustment is expressly provided for or excluded by any other provision of the Contract.
- C. In case the Contractor is actually and necessarily delayed by any act or omission on the part of the Commission, as determined by the Commission in writing, the time for completion of the Work shall be extended by the amount of the time of such delay as determined by the Commission in its sole discretion.
- D. Only the actual delay necessarily resulting from the causes specified in this Article shall be grounds for extension of time. In case the Contractor is delayed at any time or for any period by two or more of the causes specified in this Article, the Contractor shall not be entitled to a separate extension for each one of the causes but only one period of extension will be granted for the delay.
- E. In case the Contractor is actually and necessarily delayed in the performance of the Work from one or more of the causes specified in this Article, the extension of time to be granted to the Contractor shall be only for such portion of the Work so delayed. The Contractor shall not be entitled by reason of such delay to an extension of time for the completion of the remainder of the Work. If the Contractor shall be so delayed as to a portion of the Work, it shall proceed continuously and diligently with the prosecution of the remainder of the Work. No demand by the Contractor that the Commission determine and certify any matter of extension of time for the completion of the Work or any part thereof will be of any effect whatsoever unless the demand be made in writing at least 30 days before the completion date of the Work. Any request by the Contractor for a determination and certification by the Commission of an extension of time for a delay which occurs during the last 30 days of the Contract will be acted upon at the discretion of the Commission. The Commission's determination as to any matter of

extension of time for completion of the Work or any part thereof shall be binding and conclusive upon the Contractor.

- F. Permitting the Contractor to finish the Work or any part thereof after the time fixed for completion or after the date to which the time for completion may have been extended or the making of payments to the Contractor after any such periods shall not operate as a waiver on the part of the Commission of any rights under this Contract.
- G. The Contractor shall insert in each Subcontract a provision that the Subcontractor shall comply immediately with a written order of the Contracting Officer or the Engineer to the Contractor to suspend the Work, and that they shall further insert the same provision in each Subcontract of any tier.

18. **TERMINATION FOR CONVENIENCE**

- A. The performance of Work under this Contract may be terminated by the Commission in accordance with this Article in whole, or from time to time in part, whenever such termination is in the best interest of the Commission. Such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of Work under the Contract is terminated, and the date upon which such termination becomes effective.
- B. After receipt of a Notice of Termination, and except as otherwise directed by the Commission, the Contractor shall:
 - 1. Stop Work under the Contract on the date and to the extent specified in the Notice of Termination;
 - 2. Place no further orders or Subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the Work under the Contract as is not terminated;
 - 3. Terminate all orders and Subcontracts to the extent that they relate to the performance of Work terminated by the Notice of Termination.
 - 4. Assign to the Commission in the manner, at the times, and to the extent directed by it, all of the rights, title, and interest of the Contractor under the orders and Subcontracts so terminated, in which case the Commission will have the right, in its sole discretion, to settle or pay any or all claims arising out of the termination of such orders and Subcontracts;
 - 5. Settle outstanding liabilities and claims arising out of such termination of orders and subcontracts, with the approval or ratification of the Commission, to the extent

it may require, which approval or ratification shall be final for the purposes of this Article;

6. Transfer title and deliver to the Commission in the manner, at the times, and to the extent, if any, directed by it, (a) the fabricated or unfabricated parts, work-in-process, completed work, supplies and other material procured as a part of, or acquired in connection with the performance of, the Work terminated by the Notice of Termination, and (b) the completed or partially completed plans, drawings, information, and other property, which if the Contract had been completed, would have been required to be furnished to the Commission;
 7. Use its best efforts to sell, in the manner, at the times, to the extent and at the price or prices directed or authorized by the Commission, property of the types referred to in sub-article B.6 above; provided, however, that the Contractor (a) shall not be required to extend credit to any purchaser, and (b) may acquire any such property under the conditions prescribed by and at a price or prices approved by the Commission; provided, further, that the proceeds of any such transfer or disposition will be applied in reduction of any payments to be made by the Commission to the Contractor under this Contract or will otherwise be credited to the price or cost of the Work covered by this Contract or paid in such other manner as the Commission may direct;
 8. Complete performance of each part of the Work not terminated by the Notice of Termination; and
 9. Take such action as may be necessary, or as the Engineer may direct, for the protection and preservation of the property related to this Contract which is in the possession of the Contractor and in which the Commission has or may acquire an interest.
- C. After receipt of a Notice of Termination, the Contractor shall submit to the Engineer its termination claim, in the form and with certification prescribed by the Commission. Such claim shall be submitted promptly but in no event later than six months from the effective date of termination, unless one or more extensions in writing are granted by the Commission, upon request of the Contractor made in writing within such six months period or authorized extension thereof. However, if the Commission determines that the facts justify such action, it may receive and act upon any such termination claim at any time after such six months period or any extension thereof. Upon failure of the Contractor to submit its termination claim within the time allowed, the Commission may determine, on the basis of information available, the amount, if any, due the Contractor by reason of the termination and will thereupon pay the Contractor the amount so determined.

- D. Subject to the provisions of sub-article C above, the Contractor and the Commission may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the total or partial termination of Work pursuant to this Article, which amount or amounts may include an allowance for profit on Work done; provided that such agreed amount or amounts, exclusive of settlement costs, shall not exceed the Total Contract Price as reduced by the amount of payments otherwise made and as further reduced by the Contract price of Work not terminated. The Contract will be amended accordingly, and the Contractor will be paid the agreed amount. Failure of the Contractor and the Commission to agree upon the whole amount to be paid the Contractor, by reason of the termination of Work pursuant to this Article, shall be to limit, restrict, or otherwise determine or affect the amount or amounts which may be agreed upon to be paid to the Contractor pursuant to this sub-article D.
- E. In the event of failure of the Contractor and the Commission to agree, as provided in sub-article D, upon the whole amount to be paid the Contractor by reason of the termination of Work pursuant to this Article, the Commission will pay the Contractor the amounts determined by the Commission as follows, but without duplication of any amounts agreed upon in accordance with sub-article D:
1. With respect to Contract Work performed prior to the effective date of the Notice of Termination, the total (without duplication of any items) of:
 - (a) The costs of such Work;
 - (b) The cost of settling any paying claims arising out of the termination of Work under Subcontracts or orders as provided in sub-article B.5 above, exclusive of the amounts paid or payable on account of supplies or Materials delivered or services furnished by the Subcontractor prior to the effective date of the Notice of Termination of Work under this Contract, which amounts shall be included in the costs on account of which payment is made under (a) above;
 - (c) A sum, as profit on (a) above, determined by the Commission to be fair and reasonable; provided, however, that if it appears that the Contractor would have sustained a loss on the entire Contract had it been completed, no profit shall be included or allowed under this sub-article E.1 (c) and an appropriate adjustment shall be made by reducing the amount of the settlement to reflect the indicated rate of loss; and

- (d) The reasonable cost of the preservation and protection of property incurred pursuant to sub-article B.9 and any other reasonable cost incidental to termination of Work under this Contract, including expense incidental to the determination of the amount due to the Contractor as the result of the termination of Work under this Contract.
- F. The total sum to be paid to the Contractor under sub-article E.1 above will not exceed the total Contract price as reduced by the amount of payments otherwise made and as further reduced by the Contract price of Work not terminated. Except for normal spoilage, and except to the extent that the Commission will have otherwise expressly assumed the risk of loss, there will be excluded from the amounts payable to the Contractor under sub-article E.1 above, the fair value, as determined by the Commission, of property which is destroyed, lost, stolen, or damaged so as to become undeliverable to the Commission, or to a buyer pursuant to sub-article B.7 of this Article.
- G. In arriving at the amount due the Contractor under this Article, there will be deducted:
1. The amount of any claim which the Commission has against the Contractor in connection with the Contract; and
 2. The agreed price for, or the proceeds of sale of materials, supplies, or other things acquired by the Contractor or sold, pursuant to the provisions of this Article, and not otherwise recovered by or credited to the Commission.
- H. If the termination hereunder is partial, prior to the settlement of the terminated portion of the Contract, the Contractor may file with the Commission a written request for an adjustment of the price or prices specified in the Contract relating to the continued portion of the Contract (the portion not terminated by the Notice of Termination), and such adjustment as may be agreed upon will be made in the price or prices.
- I. The Commission may from time to time, at its sole discretion and under terms and conditions it may prescribe, make partial payments and payments on account against cost incurred by the Contractor in connection with the terminated portion of the Contract whenever, in the opinion of the Commission, the aggregate of payments does not exceed the amount to which the Contractor will be entitled hereunder. If the total of the payments is in excess of the amount finally agreed or determined to be due under this Article, the excess shall be paid by the Contractor to the Commission upon demand, together with interest at the rate of 10 percent per annum, for the period from the date the excess payment is received by the Contractor to the date on which the excess payment is repaid to the Commission.

- J. Unless otherwise provided for in this Contract, or by applicable statute, the Contractor, from the effective date of termination and for a period of three years after final settlement under this Contract, shall preserve and make available to the Commission at all reasonable times at the office of the Contractor but without direct charge to the Commission, all its books, records, documents, and other evidence bearing on the costs and expenses of the Contractor under this Contract and relating to the Work terminated hereunder, or to the extent approved by the Commission, photographs, microphotographs, or other authentic reproductions thereof.
- K. The Contractor shall insert in all Subcontracts that the Subcontractor shall stop Work on the date of and to the extent specified in a Notice of Termination from the Commission and shall require that any tier Subcontractor to insert the same provision in any tier Subcontract.
- L. The Contractor shall communicate immediately upon receipt thereof, any Notice of Termination issued by the Commission to the affected Subcontractors of any tier.
- M. Under no circumstances is the Contractor entitled to anticipatory, unearned profits or consequential damages as a result of a termination or partial termination under this Article. The payment to the Contractor determined in accordance with this Article constitutes exclusive remedy for a termination hereunder.
- N. Anything contained in the Contract to the contrary notwithstanding, a termination under this Article shall not waive any right or claim to damages which the Commission may have and the Commission may pursue any cause of action which it may have under the Contract.

19. **TERMINATION FOR DEFAULT-DAMAGES FOR DELAY-TIME EXTENSIONS**

- A. If the Contractor refuses or fails to prosecute Work, or any separable part thereof, with such diligence as will insure its completion within the time specified in this Contract, or any extension thereof, or refuses or fails to complete said Work within such time, the Commission may, by written notice to the Contractor, terminate for default its right to proceed with the Work or such part of the Work as to which there has been delay. In such event the Commission may take over the Work and prosecute the same to completion, by contract or otherwise and may take possession of and utilize in completing the Work Site and necessary therefor. Whether or not the Contractor's right to proceed with the Work is terminated, the Contractor and its surety shall be liable for any damage to the Commission resulting from the Contractor's refusals or failure to complete the Work in the specified time.

- B. If the Commission so terminates the Contractor's right to proceed, the resulting damage will include but not be limited to liquidated damages until such time as may be required for final completion of the Work, any increased costs incurred by the Commission in completing the Work and any claims made by third parties against the Commission relating to the Work.
- C. The Contractor's right to proceed will not be terminated or the Contractor charged with resulting damage if the delay is such as would entitle the Contractor to an extension of time in accordance with the Article entitled EXTENSION OF TIME, and Contractor has complied with the requirements thereunder.
- D. If, after Notice of Termination of the Contractor's right to proceed under the provisions of this Article, it is determined for any reason that the Contractor was not in default under the provisions of this Article, or that the Contractor was entitled to an extension of time under the Article entitled EXTENSION OF TIME, the rights, obligations and remedies of the parties shall be the same as if the Notice of Termination had been issued pursuant to the Article entitled TERMINATION FOR CONVENIENCE.
- E. The right to terminate for default and any other rights and remedies of the Commission provided in this Article are in addition to any other rights and remedies provided by law or under the Contract.

20. **TERMINATION OF RIGHT TO PROCEED FOR CERTAIN DEFAULTS**

- A. In addition to the Commission's right to terminate for default under other Articles of the Contract, the Commission will have the right to terminate the Contractor's performance of Work in whole or in part for default for any of the following reasons:
 - 1. The Contractor's or Subcontractor's performance of Work is in violation of the terms of the Contract.
 - 2. The Contractor or Subcontractor has violated an authorized order or requirement of the Commission, the Contracting Officer or the Engineer.
 - 3. Abandonment of the Contract.
 - 4. Assignment or subcontracting of the Contract or any Work under the Contract without approval of the Commission.
 - 5. Bankruptcy or appointment of a receiver for the Contractor's property.

6. Performance by the Contractor in bad faith.
 7. Contractor allowing any final judgment to stand (unsatisfied) for a period of 48 hours (excluding weekends and legal holidays).
 8. Material failure to comply with any law, ordinance, rule, regulation or order of a legal authority applicable to the Contractor, the Work, the Contract or the Project.
 9. Failure to indemnify any party which the Contractor is obligated to indemnify under the Article entitled LIABILITY AND INDEMNIFICATION or elsewhere under the Contract.
- B. If, in the opinion of the Commission, the Contractor is in default of the Contract, the Commission will so notify the Contractor. If the Contractor fails to remedy or commence to remedy the default within five days after receipt of such notice, the Commission may terminate the Contractor's right to proceed with the Work or that portion of the Work which the Commission determines is most directly affected by the default.
 - C. Termination for unexcused delay is provided under the Article entitled TERMINATION FOR DEFAULT-DAMAGES FOR DELAY-TIME EXTENSIONS.
 - D. Termination for failure to promptly replace rejected Material or correct rejected workmanship is provided under the Article entitled INSPECTION.
 - E. If, after Notice of Termination of Contractor's right to proceed under this Article it is determined for any reason Contractor was not in default, the rights and obligations of the parties shall be the same as if the Notice of Termination had been issued pursuant to the Article entitled TERMINATION FOR CONVENIENCE.

21. **RIGHTS AND OBLIGATIONS IN TERMINATION FOR DEFAULT**

- A. This Article shall apply to termination for any default covered in these General Conditions.
- B. On the receipt of a Notice of Termination from the Commission the Contractor shall:
 1. Stop Work on the date of, and to the extent specified in, the Notice of Termination;
 2. Place no further orders or Subcontracts for materials, equipment, services, or facilities except that which is necessary to complete the portion of the Work which is expressly not terminated under the Notice of Termination.

3. Terminate all orders or Subcontracts to the extent that they relate to the performance of Work terminated by the Notice of Termination;
 4. Comply with all other requirements of the Commission specified in the Notice of Termination.
- C. If the Contract is terminated as provided in this Article, the Commission may require the Contractor to transfer title and deliver to the Commission, as directed by the Engineer, the following:
1. Any completed supplies or Commission-Furnished Equipment, and;
 2. Such partially completed supplies and materials, installations, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (hereinafter called "manufacturing materials") that the Contractor has specifically produced or acquired for the terminated portion of this Contract. The Contractor shall also protect and preserve property in its possession in which the Commission has an interest at the Contractor's sole expose.
- D. Upon the Commission's termination of the Contractor's right to proceed with the Work because of the Contractor's default under the Contract, the Commission will have the right to complete the Work by whatever means and method it deems advisable. The Commission will not be required to obtain the lowest prices for completing the Work but shall make such expenditures as, in the Commission's sole judgement, best accomplish such completion.
- E. The expense of completing the Work, together with a reasonable charge for engineering, managerial and administrative services, as certified by the Commission, will be charged will be deducted by the Commission out of such monies as may be due or may at any time thereafter become due to the Contractor. In case such expense is in excess of the sum which otherwise would have been payable to the Contractor or its surety shall promptly pay the amount of such excess to the Commission upon notice of the excess so due. The Commission may, of any progress payments otherwise due the Contractor until completion and final settlement of the Work covered by the Notice of Termination of Contractor's right to proceed.
- F. The Contractor shall insert in all Subcontracts that the Subcontractor will stop Work on the date of or to the extent specified in a Notice of Termination from the Commission and shall require the Subcontractors to insert the same provision in any of their Subcontracts.

- G. The Contractor shall immediately upon receipt communicate any Notice of Termination issued by the Commission to the affected Subcontractors and suppliers at any tier.
- H. Rights of Surety: The Surety on the Contractor's Performance Bond provided for in this Contract shall not be entitled to take over the Contractor's performance of Work in case of termination under this Article, except with the consent of the Commission.

22. NOTICE OF POTENTIAL CLAIM

- A. It is an express condition of Contractor's right to make a claim or to receive any recovery or relief under or in connection with the Contract, that Contractor submit a written notice of potential claim to the Engineer in accordance with the provisions of this Article. Failure to comply with the provisions hereof shall constitute a waiver by the Contractor of any right, equitable or otherwise, to bring any such claim against the Commission.
- B. The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, Contractor's plan for mitigating such costs and if ascertainable the amount of the potential claim. The Notice provided above shall be given within seven days after the happening of the event or occurrence giving rise to the potential claim; provided, however, if the event or occurrence is claimed to be an act or omission of the Contracting Officer or Engineer notice shall be given prior to the time for performance of the portion of the Work to which such alleged act or omission relates. The notice requirements of this Article are in addition to any other notice requirements set forth in the Contract.

23. SUBMITTAL OF CLAIMS

- A. Claims shall be filed by the Contractor within 60 days of the occurrence of the event or occurrence giving rise to the claim, in sufficient detail to ascertain the basis and amount of said claims. It will be the responsibility of the Contractor to furnish, when requested by the Engineer, such further information and details as may be required to determine the facts or contentions involved in said claim. The Contractor agrees that it shall give the Engineer access to its books, records and other materials relating to the Work, and shall cause its Subcontractors to do the same, so that the Engineer can investigate such claim. The Contractor's failure to submit any claim in writing within the relevant time and in the manner prescribed above shall waive any relief that might otherwise be due with respect to such claim.

- B. Each claim the Contractor may make for adjustment on account of delay for any cause shall be accompanied by a revised progress schedule reflecting the effects of the delay and proposals to minimize these effects. If no progress schedule has been submitted to the Engineer reflecting conditions prior to the delay for which relief is sought, then a progress schedule so reflecting these conditions shall be prepared and submitted with the claim.
- C. Supporting data for any claim involving time extensions shall be submitted to the Commission within 45 days after filing a written notice of potential claim as specified in the Article entitled NOTICE OF POTENTIAL CLAIM, and shall be updated at intervals not to exceed 30 days thereafter. The updated data shall reflect excess time expenditures to date and excess time expenditures anticipated for completion of the activity(s) for which the time extension is claimed.
- D. Depending upon the grounds for relief and the nature of relief sought, additional submittals and conditions upon submitting claims may be required elsewhere in these General Conditions.
- E. The Commission shall be entitled to a reasonable time, in no case less than 90 days, after it receives each claim, in writing and accompanied by supporting documents and evidence, in which to investigate, review, and evaluate such claim. When the Commission has completed its investigation, review, and evaluation, it will advise the Contractor of the relief, if any, to which it has found the Contractor to be entitled. If the Contractor is not satisfied with the Commission's findings, it shall, within 30 days next after being advised thereof, request the Commission to reconsider. The Contractor's failure within the time to request reconsideration shall waive any relief other than or in addition to that, if any, which the Commission has found to be due. Within 30 days after the Commission receives such a request to reconsider, it will advise the Contractor of its final determination with respect to the claim that is subject of such request.
- F. In no event shall claims be made after final payment is made under the Article entitled FINAL PAYMENT which is included in the Compensation and Payment Provisions.

24. DISPUTES

- A. Except as otherwise expressly provided in the Contract, any dispute concerning a question of fact or a mixed question of fact and law arising under the Contract and which is not resolved by agreement, shall be decided by the Contracting Officer.
- B. The Contracting Officer shall issue his decision in written form and furnish a copy thereof to the Contractor. The decision of

the Contracting Officer shall be final and binding upon the Contractor. The Contractor agrees to accept the decision of the Contracting Officer as final, binding and conclusive unless by law the Contractor is entitled to judicial review of such decisions.

- C. The Contracting Officer may require the Contractor to furnish additional information to substantiate its claim. The Contractor shall give the Contracting Officer such access to its books, records and other Materials, and shall cause its Subcontractors to do the same, as may be deemed necessary by the Contracting Officer to resolve such appeal. In connection with any proceeding under the Article, Contractor shall be afforded an opportunity to be heard and offer evidence in support of its claim.
- D. The pendency of a dispute shall not relieve the Contractor of its duty diligently to perform its obligations under the Contract pending resolution of said dispute.

25. INSPECTION

- A. In addition to the inspections and tests required to be performed by the Contractor, all equipment (which term throughout this Article includes without limitation raw materials, components, intermediate assemblies, and end products) shall be subject to inspection and test by the Engineer at all reasonable times and places including the period of manufacture, and, in any event, prior to acceptance. Except to the extent specified in writing by the Engineer, no inspection or test by the Engineer shall be construed as constituting or implying acceptance. Inspection or test shall not relieve the Contractor of responsibility for damage to or loss of the Material prior to Final Acceptance of the completed Work.
- B. If equipment is defective in material or workmanship or otherwise not in conformity with the requirements of the Contract Documents, the Engineer shall have the right either to reject it (with or without instructions as to its disposition) or to require its correction. Equipment which has been rejected or required to be corrected shall be removed or, if permitted or required by the Engineer, corrected in-place by and at the expense of the Contractor, promptly after notice, and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed. If the Contractor fails to either promptly remove such supplies or lots of supplies which are required to be removed, or promptly to replace or correct such supplies or lots of supplies, the Commission may, either by contract or otherwise, replace or correct such supplies and charge to the Contractor the cost occasioned the Commission; or terminate this Contract for default.

- C. If any inspection or test is made by the Commission on the premises of the Contractor or a Subcontractor, the Contractor shall provide, at its own expense, all reasonable facilities and assistance for the safety and convenience of the Commission in the performance of its duties. The Commission reserves the right to charge to the Contractor any additional cost of Commission inspection and test when equipment is not ready at the time such inspection and test is requested by the Contractor, or when reinspection or retest is necessitated by prior rejection. Acceptance or rejection of the equipment shall neither relieve the Contractor from responsibility for Equipment not in accordance with the requirements of the Contract Documents, nor impose liability on the Commission thereto.
- D. The inspection and test by the Commission is for its sole benefit and does not relieve the Contractor from any responsibility regarding defects or other failures to meet the requirements of the Contract Documents, or the responsibility of providing quality control measures and inspections to assure the Work complies with the Contract.
- E. The operations of the Contractor, its subcontractors and suppliers shall be subject at any time to Commission audit and verification of compliance to all requirements of the Contract Documents relative to practices, methods, procedures, and documentation.

26. **COMMISSION-FURNISHED EQUIPMENT**

The Commission may provide equipment for installation or other use by the Contractor in carrying out the Work under the Contract. When such Commission-Furnished Equipment (CFE) is provided for any purpose, the Contractor shall have responsibility as follows:

- A. The schedule for delivery of the CFE to the Contractor will be mutually determined by the Commission and the Contractor. The Contractor shall identify required delivery dates in the contract schedule, as defined in the Specifications. When appropriate, schedules for the return of any CFE from the Contractor will be established in a like manner.
- B. CFE designated in the Contract for shipment to the Contractor's facilities will be shipped FOB destination by common carrier to the location specified by the Contractor. The Contractor shall bear responsibility for unloading, handling, storage, and for all expense of the same. Risk of loss shall lie with the Contractor from receipt until return to the Commission.
- C. The Contractor shall bear responsibility for and all expenses of pick-up from Commission storage facilities, located within the

Los Angeles County area for CFE scheduled for the Contractor installation at the Project Site.

- D. Should CFE be lost or damaged from any cause after receipt by the Contractor, the Commission shall be notified immediately. The Contractor shall replace or repair it in a manner acceptable and at no cost to the Commission. If the Commission is subjected to extra expense because of such loss or damage, those costs will be repaid by the Contractor and may be withheld from monies due or becoming due to the Contractor.

27. **PACKING AND SHIPPING**

- A. Certain items require Commission inspection prior to shipment, in accordance with the requirements of the Contract Documents. For such items, the Contractor shall, at least ten days prior to the estimated shipping date, request authorization to ship. The request shall state the date the items will be ready for inspection by the Engineer and list exceptions or waivers for any Work not completed. The Commission may elect to conduct or waive inspection at the source prior to authorization of the shipment. The Commission will either authorize the shipment in writing or advise the Contractor that it will conduct further inspection. Authorization by the Commission prior to shipment, as specified in this Article, with or without Commission inspection, shall in no way constitute acceptance or relieve the Contractor from fulfilling the requirements of the Contract Documents.
- B. All shipments shall be at the Contractor's expense, FOB destination within the consignee's facility.
- C. All shipments shall be packaged and packed in accordance with the best commercial standards to insure the integrity of equipment during transportation, handling, and storage. Due regard shall be given to protection from loss and pilferage, physical damage, and the effect of the elements and environmental conditions. There shall be no on-deck shipments by cargo vessel without specific approval from the Engineer. These requirements are in addition to any packaging requirements contained in the Special Provisions or Specifications for specific items of equipment.

28. **TITLE AND RISK OF LOSS**

- A. As a security for partial, progress, or other payments, title to Work for which such payments are made shall pass to the Commission at the time of payment. To the extent that title has not previously been vested in the Commission by reason of payments, full title shall pass to the Commission at delivery of the Work at the destination specified in this Contract. Work to which the Commission has received title by reason of progress or

partial payments shall be segregated from other Contractor or subcontractor materials and clearly identified as Commission property.

- B. Notwithstanding passage of title in whole or in part to the Commission, the risk of loss or damage shall remain with the Contractor until installation in the Commission facilities (when installation is in the Contractor's Scope of Work), or delivery of the Work to the Commission at the destination specified in this Contract. At that event, the risk of loss shall pass to the Commission.

29. **GOVERNING LAW**

- A. The Contract shall be governed by and interpreted in accordance with the laws of the State of California. The Contractor shall also abide by all applicable city and county ordinances.
- B. The Contractor, by entering into the Contract, consents and submits to the jurisdiction of the Courts of the State of California, over any action at law, suit in equity or other proceeding that may arise out of the Contract.
- C. The Contractor acknowledges that it has familiarized itself with the requirements of any and all applicable Federal, State, County and Municipal laws, codes, rules and regulations and the conditions of any required licenses and permits prior to entering into this Contract. Contractor shall be responsible for complying with any and all of the foregoing at its sole cost and expense and without any increase in Contract price or Contract Time on account of such compliance regardless of whether such compliance would require additional labor, Equipment and/or Materials not expressly provided for in the Contract or the Contractor's Bid.

30. **AGENT TO ACCEPT SERVICE**

The Contractor shall maintain within Los Angeles County a duly authorized agent to accept service of legal process on its behalf, and shall keep the Commission advised of such agent's name and address, during the duration of the Contract, and for three years after final payment or as long as Contractor has warranty obligations under the Article entitled WARRANTY OF WORK, whichever period terminates later.

31. **ASSIGNMENT**

- A. The Contractor or its surety shall not assign, transfer, convey, sublet or otherwise dispose of this Contract, or right, title or interest in or to the same of any part thereof, without the previous consent in writing of the Contracting Officer endorsed

upon or attached to the copies of this Contract filed in the Commission offices.

- B. No right under this Contract shall be asserted against the Commission, in law or in equity, by reason of any so-called assignment of this Contract, or any part thereof, unless authorized as aforesaid by the written consent of the Contracting Officer.
- C. Any assignment of money shall be subject to all proper setoffs and withholdings in favor of the Commission and to all deductions provided for in the Contract. All money withheld, whether assigned or not, shall be subject to being used by the Commission for completion of the Work pursuant to the terms of this Contract.

32. **PAYMENT OF TAXES**

The Contractor is responsible for paying all retail sales and use, transportation, export, import, special, or other taxes and duties applicable to, and assessable against any Work, Materials, Equipment, Services, processes and operations incidental to or involved in the Contract. The Contractor is responsible for ascertaining and acquainting itself with such taxes and making all necessary arrangements to pay them. The prices established in the Contract shall include compensation for any taxes the Contractor is required to pay by laws and regulations in effect on the Bid Opening date.

33. **ANTI-DUMPING**

The Contractor represents and warrants that its prices do not violate the United States Anti-Dumping Act, 19 USC 160 et seq., as amended, and agrees to pay any duties or other penalties assessed under said Act. The Contractor agrees to indemnify and hold harmless the Commission from any loss or expense, including, but not limited to, reasonable attorney's fees that the Commission may incur from any claim, demand, or investigation of alleged violation of said Act.

34. **PATENTS AND COPYRIGHTS**

- A. The Contractor shall warrant that the materials, equipment, or devices used on or incorporated in the Work shall be delivered free of any rightful claim of any third party for infringement of any patent or copyright. The Contractor shall defend or may settle, at its expense, any suit or proceeding against the Commission or its representatives based on a claimed infringement which would result in a breach of this warranty. The Contractor shall pay all damages and costs awarded therein due to such breach.

B. The Contractor shall bear all costs arising from the use of patented materials, equipment, devices or processes used on or incorporated in the Work. In case material, equipment, devices or processes are held to constitute an infringement and their use is enjoined, the Contractor, at its expense, shall:

1. Secure for the Commission the right to continue using said materials, equipment, devices or processed by suspension of the injunction or by procuring a license or licenses; or
2. Replace such materials, equipment, devices or processes with noninfringing materials, equipment, devices or processes; or
3. Modify them so that they become noninfringing.

The Contractor shall include, or have included, the requirements of this Article in all Subcontracts of any tier.

35. RIGHTS IN TECHNICAL DATA AND COPYRIGHTS

A. Technical Data, as used herein, means any form of technical writing, pictorial reproductions, drawings or other graphic representations, and documents of a technical nature, including computer software and program listings, shop drawings, and Product Data which are developed or used pursuant to the Contract. All Technical Data is the property of the Commission and the Commission may use, duplicate, or disclose the technical data listed above and the information conveyed therein, in whole or in part, in any manner and for any purpose whatsoever, and have or permit others to do so.

B. The Contractor agrees to grant to the Commission and to its officers, agents, and employees acting within the scope of their official duties, a royalty-free license to publish, translate, reproduce, deliver, and use as it deems fit all Technical Data covered by copyright supplied for the Contract.

The Contractor shall secure and deliver to the Commission the written permission of the copyright owner for the Commission to use such in the manner herein described.

The Contractor shall report to the Commission promptly and in reasonable written detail each notice or claim of copyright infringement received by the Contractor with respect to any technical data delivered hereunder.

36. DISADVANTAGED/WOMEN-OWNED BUSINESS ENTERPRISE PROVISIONS

Requirements for utilization of Disadvantaged and Women-Owned Business Enterprises are specified in Part E of the Procurement

Document entitled **AFFIRMATIVE ACTION/LABOR COMPLIANCE MANUAL.**

37. **EQUAL EMPLOYMENT OPPORTUNITY**

Requirements for equal employment opportunity and affirmative action are specified in Part E of the Procurement Document entitled **AFFIRMATIVE ACTION/LABOR COMPLIANCE MANUAL.**

38. **SUBCONTRACTORS AND SUPPLIERS**

- A. The Contractor shall utilize major Subcontractors and suppliers from the list of such organizations submitted by the Contractor and as reviewed and accepted by the Commission.
- B. The Contractor shall not, without the written consent of Commission, either replace any Subcontractor previously approved, or permit any such Subcontract to be assigned or transferred, or allow that portion of the Work to be performed by anyone other than the approved Subcontractor. The Contractor may perform the Work itself with qualified personnel upon written approval by the Commission in accordance with applicable law.
- C. The Contractor shall be solely responsible for the performance of Subcontractors and the fulfillment of all requirements of the Contract Documents. The Commission will recognize only the Contractor.
- D. The Contractor shall incorporate into each subcontract entered into with any of its Subcontractors the following section:

"Subcontractor's Duties to the Commission

Subcontractor acknowledges and agrees that all Work being performed by it under this Subcontract shall be performed in accordance with Contractor's contract with the Commission (the "Prime Contract"), which Prime Contract is incorporated by reference into and made a part of this Subcontract.

- E. The Contractor shall in addition incorporate into each Subcontract, and shall require each Subcontractor to incorporate in to any contract with a lower tier Subcontractor, the provisions of all other Articles of these General Conditions which require incorporation, to the extent provided for in such Article.
- F. The Contractor agrees that the above language does not and shall not operate to relieve the Contractor of any duty or liability under the Contract nor does it create any duty or liability on the part of the Commission. The Contractor shall have sole responsibility for promptly settling any disputes between

Subcontractors and between the Contractor and any Subcontractor.

- G. No Subcontractor shall be permitted to perform work at the Worksite until it, or the Contractor, in compliance with the Construction Insurance Specifications, has furnished satisfactory evidence of required insurance to the Commission.

39. **USE OF THE COMMISSION'S NAME IN CONTRACTOR ADVERTISING OR PUBLIC RELATIONS.**

The Commission reserves the right to review and approve Commission-related copy prior to publication. The Contractor shall not allow Commission-related copy to be published in Contractor's advertisement or public relations programs until submitting the Commission-related copy and receiving prior approval from the Commission. The Contractor shall agree that published information shall be factual and in no way imply that the Commission endorses the Contractor's firm, service, or product. The Contractor shall include or have included the requirements of this Article in all subcontracts of any tier.

40. **LIABILITY AND INDEMNIFICATION**

To the fullest extent permitted by law, the Contractor shall, at its sole cost and expense, fully defend, indemnify and hold harmless, the Commission, the Engineer, the Construction Manager and any of their respective members, officers, employees and agents, from and against any and all claims, actions, demands, costs, judgements, liens, penalties, liabilities, damages, losses, anticipated loss of revenues, and expenses, including any fees of accountants, attorneys or other professionals, arising out of, in connection with, resulting from or related to, any act or omission by the Contractor or any of its officers, agents, employees, Subcontractors, or individual entities comprising the Contractor in connection with or relating to or claimed to be in connection with or relating to the Work, the Contract, or the Project, including but not limited to any costs or liability arising out of or in connection with:

1. failure to comply with any applicable law, statute, code, ordinance, regulation, permit or orders;
2. any misrepresentation, misstatement or omission with respect to any statement made in the Contract or any document furnished by the Contractor in connection therewith;
3. any breach of any duty, obligation or requirement under the Contract;
4. any failure to coordinate Work with other Contractors;
5. any failure to provide notice to any party as required under the Contract;

6. any failure to act in such a manner as to protect the Commission and the Project from loss, cost, expense or liability; or
7. any failure to protect the property of any utility company or property owner.

This indemnity shall survive termination of the Contract or final payment thereunder. This indemnity is in addition to any other rights or remedies which the Commission and the Engineer may have under the law or under the Contract. In the event of any claim or demand made against any party which is entitled to be indemnified hereunder, the Commission in its sole discretion reserve, retain or apply any monies due to the Contractor under the Contract for the purpose of resolving such claims, provided, however, that the Commission may release such funds if the Contractor provides the Commission with reasonable assurance of protection of the Commission's interests. The Commission in its sole discretion determine whether such assurances are reasonable.

41. GRATUITIES AND CONFLICTS OF INTEREST

- A. The Commission may, by written notice to the Contractor, terminate as a default the right of the Contractor to proceed under this Contract if it is found that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Contractor, or any agent or representative of the Contractor to any director, officer or employee of the Commission or its Engineer.
- B. In the event this Contract is terminated as provided herein, the Commission shall be entitled to pursue the same remedies against the Contractor as it could pursue in the event of a breach of the Contract by the Contractor.
- C. The Contractor shall not permit any member, officer or employee of the Commission or of a local public body during his tenure or for one year thereafter to have any interest, direct or indirect, in this Contract or the proceeds thereof, but this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit. "Local public body" means the State or any political subdivision thereof, or any agency of the State or any political subdivision thereof.
- D. The Contractor or its employees shall not enter into any Contract involving services or property with a person or business prohibited from transacting such business with the Commission pursuant to Sections 1090 et seq. and 87100 et seq. of the California Government Code. To the Commission's or Contractor's knowledge, no Commission member, officer, or employee of the Commission has any interest, whether contractual, non-contractual, financial or otherwise, in this transaction or in the business of the Contractor. If any such transaction comes to the knowledge of either party at any time,

a full and complete disclosure of such information shall be made to the other party, even if such interest would not be considered a conflict under Sections 1090 et seq. and 87100 et seq. of the California Government Code.

- E. Neither the Contractor nor its employees or Subcontractors shall provide or offer to provide any campaign contribution to any member of the Commission in violation of California Government Code Section 87308. Further, to the Commission's or Contractor's knowledge, neither the Contractor nor any of its employees or Subcontractors has provided a campaign contribution of \$250.00 or more to any member of the Commission within 12 months prior to the award of this Contract or any Subcontract of this Contract.
- F. In the event the Contractor, or any of its officers, partners, principals or employees are convicted of a crime arising out of, or in connection with, the Work to be done or payment to be made under this Contract, this Contract in whole or any part thereof may, at the discretion of the Commission, be terminated.
- G. The rights and remedies of the Commission provided in this Article are not exclusive and are in addition to any other rights and remedies provided by law or under the Contract.

42. COVENANT AGAINST CONTINGENT FEES

- A. The Contractor warrants that no person or agent has been employed or retained to solicit or obtain this Contract upon an agreement or understanding for a contingent fee, except a bona fide employee or agent. For breach or violation of this warranty, the Commission may terminate this Contract without liability or, at its discretion, deduct from the Contract Price or consideration, or otherwise recover the full amount of the contingent fees.
- B. Bona fide agent, as used in this Article, means an established commercial or selling agent, maintained by the Contractor for the purpose of securing business, that neither exerts nor proposes to exert improper influence to solicit or obtain Commission contracts nor holds itself out as being able to obtain any Commission contract or contracts through improper influence.
- C. Bona fide employee, as used in this Article, means a person employed by the Contractor and subject to the Contractor's supervision and control as to time, place, and manner of performance, who neither exerts nor proposes to exert improper influence to solicit or obtain Commission contracts nor holds out as being able to obtain any Commission contracts through improper influence.

- D. Contingent fee, as used in this Article, means any commission, percentage, brokerage, or other fee that is contingent upon the success that a person or concern has in securing a Commission contract.
- E. Improper influence, as used in this Article, means any influence that induces or tends to induce a Commission employee, officer, Contractor, Subcontractor, agent, or consultant to give consideration or to act regarding a Commission contract on any basis other than the merits of the matter.

43. **USE AND POSSESSION PRIOR TO COMPLETION**

The Commission shall have the right to take possession of or use any completed or partially completed parts of the Work. Such possession or use will not be deemed an acceptance of Work not completed in accordance with the Contract. While the Commission is in such possession, the Contractor will be relieved of the responsibility for loss or damages to the Work other than that resulting from the Contractor's fault, negligence, or breach of warranty. If such prior possession or use by the Commission delays the progress of the Work or causes additional expenses to the Contractor, an equitable adjustment in the Contract Price or the time of completion will be made and the Contract will be modified in writing accordingly.

44. **SUPERINTENDENCE BY CONTRACTOR**

- A. The Contractor shall supervise and direct the work, using the best skill and attention. It shall be solely responsible for coordinating all portions of the work under this Contract.
- B. Before starting work, the Contractor shall designate in writing the name, qualifications and experience of its proposed representative who, on approval of the Engineer, shall have full authority to represent and act for the Contractor. A facsimile of the authorized representative's signature shall be submitted to the Engineer. The authorized representative or his designated substitute, acceptable to the Engineer, shall be present at the Project Site at all times any work is in progress and at any time that any employee or Subcontractor of Contractor is present at the Project Site. Arrangements for responsible supervision, acceptable to the Engineer, shall be made for emergency work which may be required during periods when the Work is suspended.
- C. The Contractor shall notify the Engineer, in writing, when the Contractor desires to change his representative, and shall provide the information specified above for the Engineer's approval of the new representative.

45.

CONDITIONS AFFECTING THE WORK

- A. Contractor represents that prior to entering into this Contract, it conducted such investigation and examination of the Project Site, and the documents made available to it by the Commission (which include legal descriptions of the Project Site, results of tests, documents indicating the location of utilities and other structures to the extent obtained by the Commission), so as to fully and completely ascertain to its satisfaction the nature and location of the Work, the nature of the Project Site, the possibility of obstacles and conditions not identified by the Commission (and the cost to the Contractor and impact on its schedule of such identified items), the conditions relating to the transportation, handling, and storage of materials, availability of labor, the affect of any labor agreements to which the Commission is a party, water, roads, weather, topographic and subsurface conditions, other separate contracts which may be entered into by the Commission relating to the rail system being constructed and/or operated by the Commission or its designees which may affect the Work of the Contractor and which will require scheduling and coordination efforts by the Contractor, applicable provisions of law, and the character and availability of equipment, material and facilities needed prior to and during prosecution of the Work.
- B. The Contractor agrees that any information furnished to it by the Commission or its employees and agents, is for informational purposes only and does not constitute a representation by the Commission as to any of the items detailed above except as expressly set forth elsewhere in this Contract. The Contractor acknowledges that any information furnished to it by the Commission may be incomplete or incorrect and that it has taken such additional steps as deemed necessary as to satisfy itself as to the conditions and has included in its proposal sufficient allocations for unknown or unidentified conditions.
- C. The failure of the Contractor to have done any of the foregoing shall not relieve the Contractor of its duty to perform the Work under this Contract for the cost and in the time period provided in the Contract and shall not give rise to any right on the part of the Contractor to an adjustment of Contract Time or cost unless expressly provided for elsewhere in the Contract.

46.

SAFETY

- A. The Contractor is responsible for the health and safety of its employees, agents, Subcontractors and other persons on the Project Site, and it is also responsible for the protection and preservation of the Work and all materials and equipment to be incorporated therein, and the Project Site and the area surrounding the Project Site. The Contractor shall take all necessary and reasonable precautions and actions to protect all

such persons and property. Such actions include but are not limited to:

1. Compliance with all applicable laws, regulations, ordinances, rules, regulations or order of any public authority as they relate to safety of persons or property;
 2. Compliance with all conditions set forth in the Commission's Construction Safety Manual;
 3. Implementation of all practices, procedures and programs customarily implemented by contractors for projects of a similar nature; and
 4. Such other actions as may be deemed prudent by the Engineer.
- B. This Article is to be construed in its broadest sense for the protection of persons and property by the Contractor and no action or omission by the Commission, the Contracting Officer or the Engineer shall relieve the Contractor of any of its obligations and duties hereunder.

47. PUBLIC RECORDS ACT

- A. All records, documents, drawings, plans, specifications, and other material relating to conduct of the Commission's business, including materials submitted by prospective or actual proposers or bidders, are subject to the provisions of the California Public Records Act (Government Code Section 6250 et. seq.). The Commission's use and disclosure of its records are governed by this Act.
- B. During the course of the pre-bidding and bidding process or the course of the Work under any Contract awarded, the Commission will accept materials clearly and prominently labeled "TRADE SECRET" or "CONFIDENTIAL" as determined by the submitting party. Commission will endeavor to advise the submitter of any request for the disclosure of such materials. Under no circumstances, however, will Commission be responsible or liable to submitter or any other party for the disclosure of any such labeled materials, whether the disclosure is deemed required by law, by an order of court, or occurs through inadvertence, mistake, or negligence on the part of the Commission or its officers, employees or contractors.
- C. The Commission will not advise as to the nature or content of documents entitled to protection from disclosure under the California Public Records Act, as to the interpretation of that Act, or as to the definition of trade secret. The submitting party shall be solely responsible for all determinations made by it under the Act, and for clearly and prominently marking each and every page or sheet of materials with "TRADE SECRET" or

"CONFIDENTIAL" as it determines to be appropriate. Each submitting party is advised to contact its own legal counsel concerning the California Public Records Act and its application to the submitting party's own circumstances. In the event of litigation concerning the disclosure of any material submitted by the submitting party, the Commission's sole involvement will be as a stake holder retaining the material until otherwise ordered by a court, and the submitting party is responsible for otherwise prosecuting or defending any action concerning the materials at its sole expense and risk.

48. **WORKMANSHIP AND UNAUTHORIZED WORK**

- A. All Work under this Contract shall be performed in a skillful and workmanlike manner. All workers shall have sufficient skill and experience to perform the Work assigned to them. Any employee who is determined by the Engineer to be intemperate, incompetent, a threat to the safety of persons or the Work, or who fails or refuses to perform the Work in a manner acceptable to the Engineer or the Contracting Officer shall be promptly removed from the Contract by the Contractor, and shall not be re-employed on the Work.
- B. Any extra work done without written authority from the Engineer, will be considered as unauthorized and at the sole expense of the Contractor. Work so done will not be measured for payment, and no extension in Contract Time shall be granted on account thereof and may be ordered removed at the Contractor's expense. The failure of the Engineer to order such work removed does not constitute acceptance or approval of such work or relieve Contractor from any liability on account thereof.
- C. Upon failure of the Contractor to comply with any order of the Engineer or the Contracting Officer to remove such work, the work may be removed by the Commission at the Contractor's sole expense.

49. **MATERIAL**

- A. Unless otherwise indicated in this Contract, equipment, material and products incorporated in the Work covered by this Contract shall be new and of the grade specified for the purpose intended. Unless otherwise specifically indicated, reference to equipment, material, product, or patented process by trade name, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and the Contractor may, at its option, use any equipment, material, article, or process which is equivalent to that named, subject to the requirements of sub-article B of this Article.

- B. The Engineer shall be the judge of the quality and suitability of proposed alternative equipment, material, article or process subject to the power of the Contracting Officer to accept or reject such determination. The burden of proving the quality and suitability of an alternative shall be upon the Contractor. Information required by the Engineer in judging an alternative shall be supplied in written form by the Contractor at the Contractor's expense.
- C. Where use of an alternative material involves redesign of or change to other parts of the Work, the cost and time required to affect such redesign or change will be considered in evaluating the suitability of the alternative material. Redesign and changes in other parts of the Work and costs relating thereto shall be at the Contractor's expense.
- D. No action relating to the approval of alternative materials will be taken by the Engineer until the request for substitution is made in writing by the Contractor accompanied by complete data as to the quality and suitability of the materials proposed. Such request shall be made in ample time to permit approval without delaying the Work. Approval by the Engineer shall not relieve the Contractor of its duty to use only conforming materials in the Work.
- E. Where classification, rating, or other certification by a body such as, but not limited to UL, NEMA, or AREA is a part of the specification for any material, proposals for use of alternative materials shall be accompanied by reports from the listed body, or equivalent independent testing laboratory, indicating compliance with Specification requirements. Testing required to prove equality of the material proposed shall be at the Contractor's expense.
- F. Approval of an alternative material will be only for the characteristics and use named in such approval, and shall not change or modify any Contract requirement, or establish approval for the material to be used on any other Contract.
- G. Additional provisions for approval of alternative material appear in other sections of these Contract Documents.
- H. Source of Supply and Quality of Materials: The Contractor shall furnish all materials and products required to complete the Work except those designated to be furnished by the Commission.
- I. Notwithstanding prior inspection and approval by the Engineer, only materials conforming to the requirements of the Contract shall be incorporated in the Work.
- J. The materials shall be manufactured, handled and incorporated so as to ensure completed Work in accordance with the Contract.

K. Defective Materials: Contractor-furnished materials not conforming to the requirements of the Contract are hereby deemed to be rejected, in place or not, and regardless of whether or not such materials have been expressly rejected, by the Engineer. Rejected materials shall be immediately removed from the Project Site, and the Contractor shall promptly thereafter replace such rejected materials and shall repair and replace any contiguous Work (including work of other contractors or the Commission) which is damaged in the course of the removal and replacement of the non-conforming material, all at the Contractor's sole expense and without any extension of Contract Time. If the Contractor fails to promptly and satisfactorily comply with a request by the Engineer to remove and replace non-conforming materials and damaged Work, the Commission:

1. may cause the removal and replacement of such material and Work and charge the cost thereof to the Contractor; or
2. may terminate the Contractor's right to proceed in accordance with the default provisions of the Article entitled RIGHTS AND OBLIGATIONS IN TERMINATION FOR DEFAULT.

No rejected material, the defects of which have been subsequently corrected shall be used in the Work, unless approved in writing by the Engineer and unless the Contractor furnishes to the Commission such additional warranties and guarantees as the Engineer may deem proper.

L. Handling of Materials: shall be transported, handled, and stored by the Contractor in a manner which will ensure the preservation of their quality, appearance and fitness for the Work. All materials shall be stored in a manner to facilitate inspection.

M. The Contractor shall make all necessary arrangements with the owners of material sources. The Contractor shall pay all costs in connection with making such arrangements, exploring, developing and using material sources, whether or not indicated, except such costs as the Commission expressly agrees in writing to assume. The Commission will have no responsibility to the Contractor concerning local material sources other than the responsibility involved in the designations of suitability for intended use.

50. DISPOSAL OF MATERIAL OUTSIDE THE PROJECT SITE

Unless otherwise specified in the Contract, the Contractor shall make its own arrangements for disposing of waste and excess materials outside the Project Site and shall pay all costs therefor. Prior to disposing of material outside the Project site, the Contractor shall obtain written permission from the owner on whose property the disposal is to be made. The Contractor shall file with the Engineer,

said permit, or a certified copy thereof, together with a written release from the property owner absolving the Commission and the Engineer from any and all responsibility in connection with the disposal of material on said property.

51. **DAMAGE TO THE WORK AND RESPONSIBILITIES
FOR MATERIALS**

- A. The Contractor shall be solely responsible for materials delivered and Work performed until completion and Final Acceptance except those materials and work which may have been accepted under sub-article E of this Article.
- B. The Contractor shall bear the risk of injury, loss or damage to any and all parts of the Work for whatever cause, whether arising from the execution or from the non-execution of Work, except as provided for sub-article E of this Article. The Contractor shall promptly rebuild, repair or restore Work and materials which have been damaged or destroyed from any causes before completion and Final Acceptance of the Work and shall bear the expense thereof. The Contractor shall provide security and drainage and erect temporary structures as necessary to protect the Work and materials from damage.
- C. The Contractor shall be responsible for material not delivered to the Project Site for which any progress payment has been made to the same extent as if the materials were so delivered.
- D. The Contractor's responsibility for material shall be the same for the Commission furnished material under this Contract as for Contractor furnished material.
- E. Relief from Maintenance and Responsibility: The Commission may, in writing, upon written request from the Contractor, relieve the Contractor of the duty of maintaining and protecting certain portions of the Work, as described in this sub-article, which have been completed in all respects in accordance with the requirements of the Contract. In addition, such action by the Commission will relieve the Contractor of responsibility for injury or damage resulting from use by the Commission or the public for any cause, but not from injury or damage resulting from the Contractor's own operations or negligence. Portions of the Work for which the Contractor may be relieved of the duty of maintenance and protection, as provided in this sub-article, include the early possession by the Commission of any portion of the Work, in accordance with the Article entitled USE AND POSSESSION PRIOR TO COMPLETION.

This Paragraph E does not relieve the Contractor of responsibility for replacing defective Work or materials in accordance with the Contract requirements.

52. **PERMITS**

Except for those permits furnished by the Commission as listed in the Special Provisions, the Contractor shall be fully responsible for identifying and obtaining, at its own expense, all necessary licences and permits in connection with the prosecution of the Work.

53. **RIGHTS IN LAND AND IMPROVEMENTS**

The Contractor shall make no arrangements with any person to permit occupancy or use of any land, structure or building within the Project Site for any purpose whatsoever, either with or without compensation, in conflict with any agreement between the Commission and any owner, former owner or tenant of such land structure or building. In no event shall the Contractor permit the Project Site to be occupied by any person for purposes than those related to the Project and except as otherwise provided in the Contract. The Contractor shall not occupy Commission owned property outside the Project Site without obtaining the prior written approval of the Contracting Officer.

54. **EMERGENCIES**

In an emergency affecting the safety of life, the Work, or adjacent property, the Contractor shall notify the Engineer as early as possible that an emergency exists. In the meantime, without special instruction from the Engineer as to the manner of dealing with the emergency, the Contractor shall act at his own discretion to prevent such threatened loss or injury. As emergency work proceeds, the Engineer may issue instructions, which the Contractor shall follow. The amount of compensation to which Contractor is entitled on account of emergency work will be determined in accordance with the Article entitled CHANGES.

55. **COORDINATION AND ACCESS**

- A. The Contractor acknowledges that it has been informed that the Commission may undertake or award other contracts for additional work. The Contractor has carefully reviewed those documents made available to it by the Commission relating to the scheduling and nature of other contracts which may be awarded and has taken into account the need to coordinate work with that of other contractors. It is the express obligation and duty of the Contractor under the Contract to coordinate its Work with the work of other contractors. The Contractor shall not unreasonably impede, hinder or delay the Commission or any other contractor in the performance of work.
- B. It is the Contractor's duty under the Contract to communicate with any contractor who will be performing work which may connect, complement or interfere with Contractor's Work and to

resolve any disputes or coordination problems with such contractor.

- C. The Contractor agrees that it will be responsible to any other contractor performing work related to the Project for any loss, injury, damage or delay caused by the Contractor. The contractor and its Performance Bond Surety shall indemnify and hold harmless the Commission, and the Engineer from and against any claim brought against any of them by another contractor as a result of the Contractor's alleged acts or omissions.
- D. If any part of the Contractor's Work depends upon the work of any other contractor or the Commission for proper execution or results, the Contractor shall prior to proceeding with such work, promptly report to the Engineer any discrepancies or defects in such other work that would render it unsuitable for proper execution and results. Failure to so notify the Engineer shall constitute the Contractor's acceptance of such work as suitable.

56. **PROTECTION OF EXISTING VEGETATION, STRUCTURES UTILITIES AND IMPROVEMENTS**

- A. The Contractor shall preserve and protect existing vegetation such as trees, shrubs, and grass on or adjacent to the Project Site which are not indicated to be removed and which do not unreasonably interfere with the Work and it shall replace in kind the vegetation, shrubs and grass damaged by it at its own expense.
- B. The Contractor shall protect from damage utilities, foundations, walls or other parts of adjacent, abutting, or overhead buildings, railroads, bridges, structures, surface and subsurface structures at or near the Project Site and shall be responsible for the repair or restoration of any damage to such facilities resulting from failure to comply with the requirements of this Contract or the failure to exercise reasonable care in the performance of the Work. If the Contractor fails or refuses to repair any such damage promptly, the Commission may have the necessary work performed and charge the cost thereof to the Contractor.
- C. At points where the Contractor's operations are adjacent to utility facilities, damage to which might result in expense, loss, disruption of service or other undue inconvenience to the public or to the owners, work shall not be commenced until all arrangements necessary for the protection thereof have been made by the Contractor. The Contractor shall be solely and directly responsible to the owners and operators of such utilities for any damage, injury, expense, loss, inconvenience, or delay, caused by the Contractor's operations.

- D. Where public utilities or their appurtenances interfere with the Work unless otherwise specified, work involved in permanently relocating or otherwise altering such public utilities and their appurtenances will not be a part of this Contract but will be done by utility owners at no cost to Contractor. If Contractor wishes to have any utilities temporarily relocated, it shall make necessary arrangements with the owners and reimburse them at its own expense for cost of the work. The Contractor shall keep the Engineer advised of temporary relocation arrangements.
- E. The Contractor shall not repair or attempt to repair utility damage but shall immediately contact the utility owner. The Contractor shall obtain the name, address and telephone number of each utility company that the Work will affect and the person in such utility company to contact. It shall submit to the Engineer said names, addresses and telephone numbers.
- F. The Contractor agrees that it has included adequate Contract Price and Contract Time for delays which may be caused by the need to remove and/or relocate existing public utilities or other structures, including public utilities or other structures not identified at the time of commencement of the Work and labor and equipment to minimize the impact of such delays. Accordingly, the Contractor expressly waives any right which it might have to seek an adjustment of the Contract Time or Contract price on account of reasonable delays arising from such causes.
- G. The Contractor shall comply with all applicable laws, regulations, codes and orders regarding precautions to be taken in the protection of existing vegetation, structures, utilities, and improvements.
- H. Diagrams, photographs, plans, and other data will be available for inspection at the office of the Commission. Responsibility for the accuracy, reliability, and completeness of diagrams, photographs, plans and other data will not be assumed by the Commission or the Engineer. The data is made available to the Contractor for information only. Assumptions and conclusions derived from the data in no way relieve the Contractor from the responsibility of fulfilling the requirements of the Contract.
- I. The Contractor shall maintain access to fire hydrants and fire alarm boxes throughout the prosecution of the Work. Hydrants, alarm boxes, and standpipe connections shall be kept clear and kept visible unless approved otherwise. If visibility cannot be maintained, the Contractor shall provide clearly visible signs showing the location of the fire hydrant, fire alarm box or standpipe connection.

57.

DIFFERING SITE CONDITIONS

- A. The Contractor shall promptly, and before such conditions are disturbed, notify the Engineer in writing of:
1. subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents, or
 2. unknown physical conditions at the Project Site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract. The Engineer will promptly investigate the conditions, and if such conditions materially differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under the Contract, whether or not changed as a result of such conditions, an adjustment will be made and the Contract modified in writing according to the Article entitled **CHANGES**.
- B. No claim of the Contractor will be allowed unless the Contractor has given the notice required in this Article and by the Article entitled **NOTICE OF POTENTIAL CLAIM**.
- C. No claim by the Contractor for an equitable adjustment hereunder will be allowed if asserted after Final Payment under this Contract.
- D. If the Commission is not given written notice prior to conditions being disturbed, the Contractor shall be deemed to have waived his right to assert a claim for additional time and compensation arising out of such changed conditions.
- E. Should the Contractor fail to notify the Engineer of conditions that cause a decrease in the Contractor's cost of, or the time required for, performance of any part of the work under the contract, the Commission reserves the right to modify the Contract to reflect said decrease according to the Article entitled **CHANGES**.

END OF GENERAL CONDITIONS

1

PART C

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

PART "C"

SPECIAL PROVISIONS

CONFORMED CONTRACT NO. R01-T01-H0860

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

CONFORMED CONTRACT No. R01-T01-H0860

PART "C"

SPECIAL PROVISIONS

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LOS ANGELES COUNTY TRANSPORTATION COMMISSION

CONFORMED CONTRACT NO. R01-T01-H0860

PART "C"

SPECIAL PROVISIONS

SP-1 INSURANCE REQUIREMENTS

Contractor-furnished and Commission-furnished insurances shall be as stipulated in Part H - Construction Insurance Specifications, attached to this Contract.

SP-2 COMMISSION-FURNISHED PERMITS

Notwithstanding the provisions of the General Condition hereof entitled "Permits", the Commission will, without cost to Contractor, furnish the permits listed below. Contractor shall, in accordance with the General Condition hereof entitled "Permits", obtain all other permits required for the performance of the Work. All such permits furnished by the Commission will be available for examination at the Commission's office on the Work Site during regular business hours. Bidders are advised that permits to be furnished by the Commission may not be available on the dates indicated. Effects, if any, of delays in effective dates, will be addressed under provisions of the General Conditions, Articles 45-49.

NONE

SP-3 COOPERATION WITH OTHERS

There may be other contractors, subcontractors, or employees of the Commission and its authorized representatives working at or adjacent to the Work Site during the performance of this Contract by Contractor. Contractor must anticipate in its schedule and expenses that its work may be interfered with or delayed from time to time on account of the concurrent activities of others, and Contractor shall fully cooperate with the Commission and other contractors and subcontractors to avoid any delay or hindrance of their activities and to assure the orderly completion of the Work as a whole. The Commission may also require that certain facilities and areas be used concurrently by Contractor and other persons. No extension of time for completion will be granted and no additional payment will be made to Contractor by the Commission as a result of such interferences or delays arising from the activities of others at or adjacent to the Work Site.

SP-4 PERFORMANCE BOND

The Performance Bond required by this Contract shall remain in full force and effect for a period of two years after acceptance of the Work by the Commission to insure that defects which appear within said period will be repaired, replaced, or corrected by the Contractor, at the Contractor's own cost and expense, to the satisfaction of the Commission within thirty (30) days after written notice thereof by the Commission.

SP-5 PROSECUTION & COMPLETION OF WORK

Contractor shall commence performance of the Work upon the date specified in the formal Notice to Proceed issued to Contractor hereunder and shall furnish sufficient forces, facilities and Construction Plant, and shall work such hours, including extra shifts and overtime operations, so as to prosecute the Work to completion in accordance with the following Major Contract Dates:

Right-of-Way and TPSS Work Sites:

	<u>Completion Date</u>	<u>Access Date</u>
Willow to L.A. River	11/30/89	NTP
L.A. River to Imperial	02/01/90	NTP
Imperial to Slauson	02/01/90	NTP
North of Slauson	02/01/90	12/01/89
South of Willow	06/01/90	02/01/90

Buildings and Building Sites:

	<u>Completion Date</u>	<u>Access Date</u>
Central Control Facility	03/01/90	NTP
Maintenance Facility	03/01/90	NTP

Stations and Park & Rides:

	<u>Completion Date</u>	<u>Access Date</u>
North of L.A. River	07/01/90	02/01/90
South of L.A. River	07/01/90	02/01/90

While every effort will be made to release all work areas at the earliest possible dates, access cannot be guaranteed earlier than the dates shown above for those specific areas. Failure of the Contractor to complete to the milestone dates shown below will result in the assessment of liquidated damages against the Contractors.

SP-6 NOTICE AND SERVICE THEREOF

Any notice required or given by one party to the other under the Contract shall be in writing and shall be dated and signed by the party giving such notice or by a duly authorized representative of such party. Any such notice shall not be effective for any purpose whatever unless served in the following manner:

Notice shall be given to the Commission by personal delivery thereof to the Construction Manager or by depositing the same in the United States mail enclosed in a sealed envelope, registered and with postage prepaid, addressed to:

Los Angeles County Transportation Commission
403 West 8th Street, Suite 500
Los Angeles, California 90014

Attention: Mr. Albert V. Scala
Manager, Contracts

Notice shall be given to the Contractor by personal delivery thereof to the Contractor or to its authorized representative at the site, or by depositing the same in the United States Mail, enclosed in a sealed envelope addressed to the Legal Address of the Contractor, registered with postage prepaid.

Notice shall be given to the Surety, or any other person, by personal delivery to the Surety or other person, or by depositing the same in the United States Mail, enclosed in a sealed envelope addressed to the Surety or other person at the address last communicated thereby to the party giving the notice, registered with postage prepaid.

SP-7 SECURITY

During the performance of the Work, Contractor shall be responsible for internal security and protection of all Construction Plant and Permanent Works. Contractor shall provide at its expense a security force at the Work Site and a lockable store for all portable tools, equipment and material required or used in the performance of the Work. The details of the security program proposed by Contractor shall be approved by the Commission.

SP-8 SUBCONTRACTS

The Contractor shall perform, with its own organization, Contract work amounting to at least 20 percent of the Contract Price, except that any designated "Specialty Items" may be performed by subcontract and the amount of any such "Specialty Items" so performed may be deducted from the Contract Price before computing the amount of work required to be performed by the Contractor with its own organization.

"Achievement of the goal shall be determined by Work performed by DBE/WBE's within the scope of the 'Lump Sum Contract Work' bid items as identified in the Schedule of Prices and Quantities. Work performed by DBE/WBE's as part of 'contingency items' will be considered as being in excess of the established goal."

SP-9 DBE SUBCONTRACTOR PARTICIPATION PERCENTAGE

This procurement has been determined to be exempt from a DBE participation goal. The Commission encourages Bidders to actively seek participation by DBE firms.

SP-10 CLASSIFICATION OF CONTRACTOR'S LICENSES

Contractor must possess a class C-61 Limited Speciality Sign License or C-45 Electrical Sign's License as required by the State of California prior to award of a contract.

SP-11 UTILITY/PIPELINE COMPANY NOTIFICATION

After obtaining necessary permits, the Contractor shall notify Underground Services Alert and all utility companies at least 48 hours in advance of excavation and provide written evidence of such notification to the Construction Manager.

1)	Edgington Oil	(213) 424-4033
2)	Four Corners	(213) 436-9071
3)	General Telephone Company	(213) 435-6321
4)	Getty (Texaco)	(209) 935-2071
5)	Golden Eagle	(213) 320-6860
6)	Golden West	(213) 921-3581
7)	Lomita Gasoline	(213) 424-1693
8)	Long Beach Gas Department	(213) 595-5311
9)	Long Beach Water Department	(213) 426-5951
10)	MacMillan Oil	(213) 424-8515
11)	Metropolitan Water District Mr. William Peksi	(213) 250-6000 (213) 250-6415
12)	Oil Operators	(213) 424-2451
13)	Southern California Edison	(213) 432-9411
14)	Southern California Edison Fuel	(213) 430-7935
15)	Southern California Gas Company	(213) 689-2641
16)	Texaco	(213) 436-1942
17)	Underground Service Alert	1-800-422-4133
18)	Union Oil	(213) 486-7760

SP-12 HEAVY EQUIPMENT

If Contractor anticipates using any vehicles or equipment over 20,000 pounds (loaded) during the performance of the Work, dimensions and weights of such equipment shall be submitted to Engineer for approval prior to use.

SP-13

CONTRACTOR'S INTERACTION WITH THE MEDIA AND THE PUBLIC

CONTACT WITH NEWS MEDIA

The Contractor will not respond to inquiries from the news media, but shall refer all questions to the Construction Manager's Resident Engineer.

COORDINATING WITH THE PUBLIC

The Contractor shall designate a staff person to keep the Construction Manager's Resident Engineer informed of all impacts on the community resulting from construction. This designated staff person may be the project superintendent or the project engineer; there need not be a full time staff person responsible for this.

COMPLAINTS

If the Contractor receives a complaint from a citizen or the community, he will inform the Construction Manager's Resident Engineer and advise what action has been taken to alleviate the situation.

TOURS

If LACTC Community Relations staff plans to conduct a site tour of the construction area, the LACTC Community Relations Manager will notify the Construction Manager's Area Manager at least one week in advance. The Construction Manager's Area Manager will coordinate with the Contractor and his staff.

NOTICES TO THE PUBLIC

If the Contractor notifies the community or general public via written notice (i.e. for utility shutoffs, emergency road closures, etc.), 6 copies of such notices must be provided to the Construction Manager's Resident Engineer for LACTC Community Relations staff.

SP-14

PROJECT CORRESPONDENCE

Notwithstanding the article entitled Notice and Service Thereof included herein, every letter, progress report, change order, transmittal, and all other documents exchanged between the Contractor and the Commission shall be assigned a unique correspondence number by the Contractor. The Contractor shall maintain a correspondence index and assign correspondence numbers consecutively for all Contractor documents. The Commission will maintain a similar correspondence numbering scheme identifying documents and correspondence initiated by the Commission. Project Correspondence

shall be addressed to the Construction Manager and submitted with a transmittal form to:

Transit Consultants of Southern California
403 West 8th Street, Suite 1100
Los Angeles, California 90014

Attention: Attie Van Wyck
Resident Engineer

SP-15 PROHIBITED FACILITIES

Contractor is prohibited from using any of the facilities and utilities being constructed by others, the use of which might imply a condition of beneficial occupancy. The facilities and utilities whose use is prohibited includes but is not necessarily limited to: toilet and restroom facilities, water, and electricity.

PART D

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

**PART "D"
COMPENSATION AND PAYMENT PROVISIONS
LUMP SUM/UNIT PRICE**

CONFORMED CONTRACT NO. R01-T01-H0860

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

PART "D"
COMPENSATION AND PAYMENT PROVISIONS
LUMP SUM/~~UNIT PRICE~~

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**PROJECT
RECORD**

CN2
~~Confirmed Contract~~
LACTC

Contract No. R01-T01-H0860

~~09-13-9~~

11.1.9

CN TO 2

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

PART "D"

COMPENSATION & PAYMENT PROVISIONS
LUMP SUM/UNIT PRICE

CP-1 COMPENSATION

In accordance with the provisions of the Contract to which this Part "D" is attached, the Commission shall pay to Contractor the Contract Price set forth below as compensation in full for performance of the Work, for all responsibilities and obligations of Contractor under this Contract, for all loss or damage arising out of the performance of the Work, and for all risks of every description connected with the Work, except as may be otherwise expressly provided in this Contract.

The Contract Price shall be ^{a lump sum amount of} One Million, Five Hundred and Twenty-Three Thousand, Two Hundred and Ninety-Nine Dollars (\$1,523,299) ✓

~~CP-2 PRICE SCHEDULE~~

~~The Contract Price shall be paid to Contractor in accordance with the following Price Schedule. Disbursement of the pay items within the contract price schedule will be in accordance with the following Provision CP-3, Progress Payments, as required by Article 37 of the General Conditions:~~

PRICE SCHEDULE
CONTINGENCY ITEMS

~~CP-2~~ ^{CONTINGENCY ITEM} PRICES FOR CHANGES AND EXTRA WORK

^{For the purpose of changes and extra work.}
The prices bid on the following items, numbered 1 through 66, will be used in computing the amounts due the Contractor where Changes in the Work, either increases or decreases are made. Unit Prices will be used only as required by Commission and only where approved changes in Work, either additions or deletions, are made.

The Sum of the prices for the Items will be included in the Total Estimated Bid Price for purposes of determining the lowest responsive and responsible Bidder. However, these prices will not be included in the awarded Contract amount.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QTY</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
<u>STATION SIGNS</u>				
1	EXTERIOR - STATION Station Identification 4-Sided Freestanding Non-Illuminated Size: 13'-0" H x 9'-0" W	1	\$16,390.00	\$16,390.00
2	NOT USED			
3	EXTERIOR - STATION Station Identification D/F Monument Non-Illuminated Size: 3'-3" H x 11'-0" W	1	\$ 5,427.00	\$ 5,427.00
4	EXTERIOR - STATION Station Identification S/F Mounted on Elevator Shaft Non-Illuminated Size: 2'-0" H x 8'-0" W	1	\$ 615.00	\$ 615.00
5	EXTERIOR - STATION Site Identification D/F Monument Non-Illuminated Size 4'-0" H x 11'-0" W	1	\$ 8,378.00	\$ 8,378.00
6	EXTERIOR - STATION Station Identification Multi-Faced Overhead Pylon Non-Illuminated Size: 4'-0" H x 11'-0" W	1	\$10,336.00	\$10,336.00
7	EXTERIOR - STATION Map Case Identification S/F Copy applied to Map Case Non-Illuminated Size: 2" High Copy	4	\$ 217.00	\$ 868.00

Conformed Contract
LACTC

D-2

Contract No. R01-T01-H0860
09.13.9

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QTY</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
8	EXTERIOR - STATION Ticket Vending Machine Information S/F Copy applied to Case Non-Illuminated Size: 2" High Copy	4	\$ 217.00	\$ 868.00
9	EXTERIOR - STATION Information Panel S/F Sign panel mounted to Station Canopy Non-Illuminated Size: Various	10	\$ 862.00	\$ 8,620.00
10	EXTERIOR - STATION Information & Directional D/F Suspended Sign Panel Non-Illuminated Size: Various	4	\$ 810.00	\$ 3,240.00
11	EXTERIOR - STATION Information & Directional D/F & S/F Sign Cabinet mounted to Ceiling Non-Illuminated Size: 1'-0" H x 4'-0" W	8	\$ 555.00	\$ 4,440.00
12	NOT USED			
13	EXTERIOR - STATION Information and Directional S/F & D/F Sign Cabinet Mounted between canopy columns Non-illuminated Size: 1'-0" High x 7'-8" Wide	2	\$ 1,063.00	\$ 2,126.00

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QTY</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
14	EXTERIOR - STATION Miscellaneous Information S/F Wall mounted Non-Illuminated Size: 9" x 9"	3	\$ 211.00	\$ 633.00
15	EXTERIOR - STATION Restrictive S/F Wall mounted Non-Illuminated Size: 9" x 9"	5	\$ 138.00	\$ 690.00

SITE SIGNS

20	EXTERIOR - SITE Vehicular Directional S/F & D/F Freestanding Reflective Copy Size: large	2	\$ 5,023.00	\$10,046.00
21	EXTERIOR - SITE Vehicular Directional S/F & D/F Freestanding Reflective Copy Size: small	2	\$ 4,426.00	\$ 8,852.00
22	EXTERIOR - SITE Vehicular Restrictive S/F Post mounted Reflective Copy Size: 6'-8" High x 1'-3" Wide	7	\$ 465.00	\$ 3,255.00
23	EXTERIOR - SITE Trailblazer - City Streets S/F Mounted to existing light standard or post Non-Illuminated Size: 1'-6" x 1'-6"	20	\$ 183.00	\$ 3,660.00

Conformed Contract
LACTC

D-4

Contract No. R01-T01-H0860
09.13.9

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QTY</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
24	EXTERIOR - SITE Trailblazer - Freeway S/F Post mounted Non-Illuminated Size: 4'-0" x 8'-0"	10	\$ 1,693.00	\$16,930.00

BUILDING SIGNS

40	INTERIOR - BUILDING Visitor Welcom & Information S/F Wall Mounted Procelain Enamel Whiteboard Size: 12" H x 12" W	5	\$ 147.00	\$ 735.00
41	EXTERIOR - BUILDING Entrance Identification S/F Door mounted Non-Illuminated Size: 2" High Copy	1	\$ 250.00	\$ 250.00
42	INTERIOR - BUILDING Conference Room Identification S/F Wall/Door Mounted with In Use tab Non-illuminated Size: 4" High x 8" Wide	1	\$ 158.00	\$ 158.00
43	INTERIOR - BUILDING Room Identification S/F Wall mounted Non-Illuminated Size: 4" High x 8" Wide	2	\$ 138.00	\$ 276.00
44	INTERIOR - BUILDING Men's Restroom Identification S/F Door mounted Non-Illuminated Size: 12" Triangle	1	\$ 180.00	\$ 180.00

Conformed Contract
LACTC

D-5

Contract No. R01-T01-H0860
09.13.9

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QTY</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
45	INTERIOR Women's Restroom Identification S/F Door mounted Non-Illuminated Size: 12" Diameter	1	\$ 180.00	\$ 180.00
46	INTERIOR - BUILDING Personnel Office Identification S/F Wall mounted with changeable strips Non-illuminated Size: 4" High x 8" Wide	1	\$ 189.00	\$ 189.00
47	INTERIOR - BUILDING Engineering Control Numbers S/F Door Frame Mounted Non-illuminated Size: 2" Circle	2	\$ 18.00	\$ 36.00
48	INTERIOR Evacuation Information S/F Wall mounted Non-Illuminated Size: 6" x 6"	1	\$ 42.00	\$ 42.00

RIGHT-OF-WAY SIGNS

50	EXTERIOR - RIGHT-OF-WAY Operational - Mile Marker S/F Ground/Post mounted Non-illuminated Size: 10" x 12"	30	\$ 357.00	\$10,710.00
52	EXTERIOR - RIGHT-OF-WAY Operational S/F Post mounted Reflective Size: 2'-0" x 2'-0"	2	\$ 402.00	\$ 804.00

Conformed Contract
LACTC

D-6

Contract No. R01-T01-H0860
09.13.9

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QTY</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
53	EXTERIOR - RIGHT-OF-WAY Operational - Fouling Marker Painted Yellow Tie	2	\$ 508.00	\$ 1,016.00
54	EXTERIOR - RIGHT-OF-WAY Station Approach Identification S/F Post Mounted Reflective Size: 1'-8" x 5'-0"	5	\$ 920.00	\$ 4,600.00
55	EXTERIOR - RIGHT-OF-WAY Operational - Switch Locator S/F Painted of ground Size: 20" Diamond	1	\$ 525.00	\$ 525.00
56	EXTERIOR - RIGHT-OF-WAY Restrictive S/F Post mounted Reflective Size: 2'-6" Circle	1	\$ 920.00	\$ 920.00
58	EXTERIOR - RIGHT-OF-WAY Regulatory/Warning Information S/F Fence mounted Reflective Size: 1'-2" x 3'-0"	30	\$ 753.00	\$22,590.00
61	EXTERIOR - RIGHT-OF-WAY Rail Vehicle Information S/F Wall mounted Reflective Size: 12" High x 18" Wide	2	\$ 228.00	\$ 456.00

ITEM NO.	DESCRIPTION	ESTIMATED QTY	UNIT PRICE	TOTAL PRICE
64	EXTERIOR - RIGHT-OF-WAY Rail Vehicle Information S/F Wall mounted Reflective Size: 12" High x 18" Wide	1	\$ 193.00	\$ 193.00
65	EXTERIOR - RIGHT-OF-WAY Track Identification S/F Building Mounted Reflective Size: 2'-6" High x 4'-0" Wide	2	\$ 175.00	\$ 350.00
66	EXTERIOR Primary Regulatory/Restrictive S/F Post/Fence mounted Non-Illuminated Size: 1'-0" High x 1'-0" Wide	3	\$ 317.00	\$ 951.00

CP-3 **PROGRESS PAYMENTS**

A. The COMMISSION will make progress payments monthly as the work proceeds based on progress as approved by the Construction Manager. The Contractor shall within 30 days after the award of the Contract, furnish a detailed schedule of values of lump sum bid items, in such detail as the Construction Manager shall request, showing the amount included therein for each principal category of the Work to provide a basis for determining the amount of progress payments. Each lump sum item shall show the estimated quantities and unit prices of all items of Work required under the Contract entering into each lump sum item. Each item of the detailed estimate shall include its proportionate share of overhead, profit, and all other expenses involved. The quantities and unit prices shall be extended to show the total amount for each item of Work and the summation of these amounts shall total in each case the exact amount of the lump sum price. The unit prices shall be in proper balance and shall be subject to approval by the Contracting Officer. In the preparation of estimates, the Contracting Officer, at its sole discretion and in writing, may authorize material delivered on the Work Site and preparatory work done to be taken into consideration. Material delivered to the Contractor at locations other than the Work Site may also be taken into consideration under sub-provision I of this Provision when the Contractor

~~Confirmed Contract~~ CW2
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Contract No. R01-T01-H0860
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11.1.9

furnishes satisfactory evidence that it will be utilized on the work covered by this Contract.

- B. From each progress estimate, 10% will be deducted and retained by the COMMISSION, and the remainder less the amount of all previous payments will be paid to the Contractor. After 50 percent of the Work (contract amount) is completed and if progress on the Work is satisfactory, no further additional deductions will be made on the remaining progress estimates. That is, the retained amount will be equal to 10% of 50% of the Contract amount for the remaining Contract period; provided however, that if progress on the Work subsequently becomes in the opinion of the Contracting Officer unsatisfactory, deductions will be reinstated and made in such amounts as to cause the total retained to equal 10% of the Contract price.

The Contractor may, at the Contractor's sole cost and expense, substitute securities equivalent to any monies withheld by the COMMISSION to insure performance under this Contract. Such security shall be deposited with the COMMISSION, or a state or federally chartered bank as escrow agent, who shall pay such monies to the Contractor upon satisfactory completion of the contract. The Contractor shall be the beneficial owner of any security substituted for monies withheld and shall receive any accrued interest thereon. Securities eligible for investment shall include those listed in Government Code Section 16430 or bank or savings and loan certificates of deposit. No such substitution shall be accepted until the Forms of Security and any other document related to said substitution is reviewed and found acceptable by the COMMISSION.

- C. Material and work covered by progress payments shall become the sole property of the COMMISSION. This provision shall not be construed as relieving the Contractor from the responsibility for materials and work upon which payments have been made, the restoration of damaged work or as waiving the right of the COMMISSION to require the fulfillment of the terms of the Contract.
- D. Progress payments will be made within 30 days of the receipt of a proper Application for Payment.
- E. No progress payments will be made when the total value of work covered by the Application for Payment is less than \$5,000.00.
- F. No progress payments will be made for work not in accordance with this Contract.
- G. Applications for progress payments shall be on the forms supplied by the COMMISSION. These applications shall be supported by evidence which is required by this Article and such other documentation as the Construction Manager may require. The Contractor shall certify that the Work for which payment is requested has been done and that the materials listed are stored

where indicated. Those items on the progress payment application that compensate for Cost-Plus Change Notice Work under Sub-section L, Article 42, CHANGES, of the General Conditions; for materials not yet incorporated in the Work under sub-provision I of this Provision or for work under change orders negotiated on cost reimbursable basis will, under procedures of the Contracting Officer, be subject to COMMISSION audit review of the Contractor's records supporting the payment application. Audits will be performed so as not to interfere with timely processing of pay applications. If audit indicates the Contractor has been overpaid under a previous payment application, that overpayment will be credited against current progress payment applications. For a period of three years from the Final Acceptance of the Contract, the Contractor shall maintain and make available for audit inspection and copying by the COMMISSION and the State and their authorized representatives, all records subject to audit review.

- H. Deductions from Progress Payments: In addition to the deductions provided for under sub-provision B hereof, the COMMISSION shall deduct from each progress payment the following:
1. Any liquidated damages which have accrued as of the date of the application for payment.
 2. Any sums expended by the COMMISSION in performing any of Contractor's obligations under the Contract which Contractor has failed to perform;
 3. Any other sums which the COMMISSION is entitled to recover from Contractor under the terms of the Contract.

The failure by the COMMISSION to deduct any of these sums from a progress payment shall not constitute a waiver of the COMMISSION's right to such sums.

- I. The COMMISSION, at its discretion, may authorize payment for material not yet incorporated in the Work, whether or not delivered to the Work Site, as follows:
1. Material shall be delivered on the Work Site, or delivered to the Contractor and promptly stored by it in bonded storage within Los Angeles County or other location as approved by the Construction Manager. Prior to inclusion of such materials in any estimate, the Contractor shall submit certified bills for such materials to the Construction Manager. The Construction Manager may allow only such portion of the amount represented by these bills as in its opinion is consistent with the reasonable cost of such materials. If such materials are stored outside Los Angeles County, the Contractor shall accept responsibility for and pay all personal and property taxes that may be levied against the COMMISSION by any state or subdivision thereof on account of such storage of such materials. The COMMISSION

will permit the Contractor, at its own expense, to in good faith contest the validity of any such tax levied against the COMMISSION in appropriate proceedings and in the event of any judgment or decree of a court, the Contractor agrees to pay same together with any penalty or other costs, relating thereto.

2. All such materials so accepted shall be and become the property of the COMMISSION. The Contractor at its own expense shall promptly execute, acknowledge and deliver to the COMMISSION proper bills of sale or other instruments in writing in a form and as required by the Construction Manager conveying and assuring to the COMMISSION, title to such material included in any partial estimate, free and clear of debts, claims, liens, mortgages, taxes and encumbrances. The Contractor at its own expense shall conspicuously mark such material as the property of the COMMISSION, shall not permit such materials to become commingled with non-COMMISSION-owned property and shall take such other steps, if any, as the Construction Manager may require or regard as necessary to vest title to such material in the COMMISSION free and clear of debts, claims, liens, mortgages, taxes and encumbrances.
 3. Material included in a partial estimate which material may subsequently become lost, damaged or unsatisfactory shall be deducted from succeeding partial estimates.
 4. Notwithstanding the passage of title as aforesaid, the Contractor shall continue to be liable and responsible to the COMMISSION for any damage to or loss of such material until such material is actually delivered to the Work Site and incorporated in the Work.
 5. Payment for material furnished and delivered as indicated in sub-provision I.1 will be based on 100 percent of the cost to the Contractor and retention will be made thereon as specified in sub-provision B of this Provision. In any event, partial payments for materials on hand will not exceed 85 percent of cost to the Contractor.
- J. If any Stop Notice or other lien is filed against the Project for labor, materials, supplies, equipment or any other thing of value claimed to have been furnished to or incorporated into the Work, or for other alleged contribution thereto, the COMMISSION shall retain from payments otherwise due the Contractor, in addition to other amounts properly withheld under this Provision or under other provisions of the Contract, an amount equal to 125% of the amount claimed under such Stop Notice; provided, however, that the COMMISSION may release such funds upon receipt of evidence satisfactory to the Contracting Officer to the effect that the Contractor has resolved such claim, by settlement, Stop Notice Bond or otherwise.

K. Property Rights in Materials: The Contractor shall have no property right in materials after they have been attached or affixed to the Work, or after payment has been made by the COMMISSION to the Contractor for materials delivered to the Work Site, or stored subject to or under the control of the COMMISSION, as provided for herein.

CP-4 CONTRACT PRICE AND PAY ITEMS

A. Payment for the various pay items listed in the ~~price schedule~~ ^{of Value} shall constitute full compensation to complete the Work in conformity with the Contract. All costs for Work shown or indicated by the Contract, even if not specifically provided for by a pay item in the ~~price schedule~~, shall be included. Except for the relief provided by Article 43, DIFFERING SITE CONDITIONS, of the General Conditions, the Contractor will not be entitled to additional compensation for providing any activity or material necessary for the completion of the Work in accordance with the Contract, ~~even though the activity or material is not included in a specific pay item indicated in Contract.~~

B. ^{9 OF THE LUMP SUM PRICE IN THIS CONTRACT WILL} ~~Payments for the various pay items listed in the price schedule~~ will constitute full compensation for restoring loss and repairing damage arising from the nature of the Work, from the action of the elements, from any unforeseen difficulties which may be encountered during the prosecution of the Work or from risks of every description, except as provided in sub-article E of Article 22, DAMAGE TO THE WORK AND RESPONSIBILITY FOR MATERIALS and Article 43, DIFFERING SITE CONDITIONS, of the General Conditions.

C. Payments for the various pay items listed in the ~~price schedule~~ ^{of Value} will constitute full compensation for all expense incurred in consequence of discontinuance of all or any portion of the Work except as provided in Article 50, TERMINATION FOR CONVENIENCE OF THE COMMISSION, of the General Conditions.

D. In the case of any pay item for which a fixed amount is predetermined by the COMMISSION, ~~such fixed amount shall be conclusive and binding upon the Contractor and such amount so entered will constitute full compensation for furnishing plant, labor, equipment, appliances, and materials and for performing all operations required to complete the work relating to such pay items as indicated in the Contract.~~

CP-5 INVOICING

Costs shall be paid to Contractor on the basis of invoices as the Work proceeds. Such invoices shall be prepared by Contractor in the form and manner requested by Commission and shall be submitted to Commission on a monthly basis or as otherwise directed by Commission.

Each such invoice shall set forth all costs incurred by Contractor not previously invoiced and shall reference the Contract Number. Invoicing of Contractor's costs shall be kept current at all times.

Progress Payments

Within thirty (30) days after receipt of each such Contractor's invoice, the Commission shall pay to Contractor the invoiced amount of Contractor's costs set forth therein for which payment has not previously been made, less the retained amount described in ~~CP-2~~, ~~Price Schedule~~, and as required by Article 37, Subarticle-"B", of the General Conditions; provided that in the event the Commission should object to any item or statement contained in any invoice, or to the sufficiency of the vouchers or other documents submitted in support thereof, the Commission shall be entitled to withhold that portion of the invoiced amount to which the Commission objects, from the payment of the balance of the invoice, or from payment of any subsequent invoice. The Commission shall promptly notify Contractor thereof, and shall pay Contractor any remaining invoice amount which is due and payable to Contractor. The retention shall be invoiced to the Commission upon final acceptance of the Work by Commission.

CP-3,

Original Invoices and two (2) copies shall be submitted to the designated Resident Engineer.

CP-6 MANNER OF PAYMENT

The Contract price shall be paid to the Contractor by the Commission and shall be transmitted to the following address:

Mail Funds to:

California Neon Products
4530 Mission Gorge Place
San Diego, CA 92120-4188

CP-7 FINAL PAYMENT

A. After the Work has been accepted by the COMMISSION, subject to the provisions of Article 19 of the General Conditions hereof WARRANTY OF WORK and Article 36 of the General Conditions, hereof, FINAL INSPECTION AND ACCEPTANCE OF THE WORK, a final payment will be made as follows:

1. Prior to Final Acceptance of the Work, the Contractor shall prepare and submit a proposed final Application for Payment to the Construction Manager showing the proposed total amount due the Contractor, segregated as to Contract item quantities, Cost-Plus Notice Work, and other bases for payments; deductions made or to be made for prior payment; amounts to be retained, any claims the Contractor intends to file at that time or a statement that no claims will be filed; and any unsettled claims, stating amounts. Prior applications and payments shall be subject to correction in

with the final Application for Payment must be otherwise timely under these General Conditions. ~~The quantities listed on the Bid pricing schedule do not govern final payment.~~ Payments to the Contractor will be made only for the actual quantities of the Contract items constructed in accordance with the Contract Documents.

2. The Contracting Officer and the Construction Manager will review the Contractor's proposed final Application for Payment and necessary changes or corrections will be forwarded to the Contractor. Within 10 days thereafter, the Contractor shall submit a final Application for Payment incorporating changes or corrections made by the Contracting Officer and the Construction Manager together with additional claims resulting therefrom. Upon approval by the Contracting Officer, the corrected proposed final Application for Payment will become the approved final Application for Payment.
3. If the Contractor files no claims with the final Application for Payment and no claims remain unsettled within 30 days after Final Acceptance of the Work by the Construction Manager and the Contracting Officer, and agreements are reached on all questions regarding the final Application for Payment, the COMMISSION, in exchange for an executed release, satisfactory in form and substance to the Contracting Officer, will pay the entire sum found due on the approved final Application for Payment, including the amount, if any, allowed on claims.
4. The release from the Contractor shall be from any and all claims arising from the Work under and in connection with the Contract and shall release and waive any claims against the COMMISSION, the Engineer, the Construction Manager and their respective agents, officers, members and employees. The release shall be accompanied by a certification by the Contractor: (1) that he has resolved any claims made by Subcontractors, suppliers and others against the Contractor or the Project; (2) that he has no reason to believe that any party has a valid claim against the Contractor or the Project which has not been communicated in writing by the Contractor to the Construction Manager as of the date of the Certificate; and (3) that all warranties and guarantees are in full force and effect. The release and certificate shall survive Final Payment.
5. Final Payment will be made within 30 days after approval of the final notice and resolution of Contractor's claims, or 30 days after Final Acceptance of the Work by the COMMISSION, whichever is later. If a final Application for Payment has not been approved within 120 days after Final Acceptance of the Work, the COMMISSION will make payment on account of items not in dispute without prejudice to the rights of the COMMISSION or the Contractor in connection with any disputed items; provided, that with respect to such undisputed items

and any unasserted claims, the Contractor shall furnish a release and certificate provided for in subsection 4 above.

6. Except where inspection of records retained by Contractor under Article 42 of the General Conditions, CHANGES; Sub-article L, COST-PLUS CHANGE NOTICE WORK; or Article 50 of the General Conditions, TERMINATION FOR CONVENIENCE OF THE COMMISSION that Final Payment was incorrectly determined, Final Payment made in accordance with this Article will be conclusive and binding against both parties to the Contract on all questions relating to the amount of work done and the compensation paid therefor.
- B. When a Contractor has exceeded the Contract Time and has not yet received an extension of time to complete the Contract so that liquidated damages may be assessed, the Construction Manager may withhold an additional amount of money to cover the amount of liquidated damages that will accrue based on the Contractor's estimated Contract completion time as confirmed by the Construction Manager.
 - C. No Estoppel: The COMMISSION shall not, nor shall any department or officer thereof, be precluded or estopped by any return of certificate or Final Application for Payment made or given by the Construction Manager, the Engineer or other officer, agent or employee of the COMMISSION under any provisions of this Contract from showing at any time (either before or after the final completion and acceptance of the Work and payment therefore), pursuant to any such return or certificate of Final Application of Payment, the true and correct amount and character of the Work done, and materials furnished by the Contractor or any person under this Contract, or from showing at any time that any such return or certificate or Final Application of Payment is untrue and incorrect, or improperly made in any particular, or that the Work and materials, or any part thereof, do not in fact conform to the Contract Documents; and the COMMISSION shall not be precluded or estopped, notwithstanding any such return or certificate or Final Application for Payment and payment in accordance therewith, from demanding and recovering from the Contractor such damages as it may sustain by reason of its failure to comply with the Contract Documents.

CP-8 ACCOUNTING OF COSTS AND AUDIT RIGHT

Contractor shall keep and maintain, and shall cause its subcontractors and outside consultants to keep and maintain, books, records, accounts and other documents (hereinafter collectively referred to as "records") sufficient to accurately and completely reflect all Recoverable Costs incurred pursuant to this Contract and any other costs which are the basis of claim by Contractor hereunder. Such records shall include receipts, memoranda, vouchers, and accounts of every kind and nature pertaining to the performance of the Work, as well as complete summaries and reports setting forth all

reimbursable manhours expended, payroll incurred and monthly salary and hourly rate of each and every employee whose payroll costs constitute Recoverable Costs hereunder. All such records shall be kept in a form and manner satisfactory to the Commission and in accordance with a system of accounting acceptable to the Commission.

The Commission, its representatives and any firm of auditors appointed by the Commission shall have access, upon reasonable advance notice in writing, to all such records maintained by Contractor and its subcontractors and consultants, for the purpose of auditing and verifying Contractor's Recoverable Costs or any other costs claimed to be due and payable hereunder. The Commission shall have the right to reproduce any such records, and Contractor and its subcontractors and consultants shall keep and preserve all such records for a period of at least one (1) year from and after completion or termination of the Work.

Contractor shall include in all subcontracts, consulting agreements and similar agreements entered into by Contractor pursuant to the performance of the Work a provision to the effect that its subcontractors, consultant or other party shall observe and comply with all the obligations of Contractor under this Section in the same manner and to the same extent as Contractor.

CP-9 LIQUIDATED DAMAGES

Execution of the Contract shall constitute agreement by the Commission and Contractor, that a dollar amount per day is the minimum value of the costs and actual damages caused by failure of the Contractor to complete the work within the allotted time, that such sum is liquidated damages and shall not be construed as a penalty, and that such may be deducted from payments due the Contractor or recovered directly from the Contractor if such delay occurs.

- o The Liquidated Damages amount is \$100.00 per calendar day.

CP-10 CONFLICTS

In the event of a conflict between the language of Part "D", Compensation and Payment Provisions and that of Part "B", General Conditions, the language of the General Conditions shall prevail.

PART E

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

PART "E"

CONTRACT COMPLIANCE MANUAL

CONFORMED CONTRACT NO. R01-T01-H0860

(UNDER SEPARATE COVER)

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

**PART 'F'
CONSTRUCTION SAFETY MANUAL**

CONFORMED CONTRACT NO. R01-T01-H0860

(UNDER SEPARATE COVER)

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

PART "G"

CONFORMED CONTRACT DRAWINGS

CONFORMED CONTRACT NO. R01-T01-H0860

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

PART "G"

CONFORMED CONTRACT DRAWINGS

Contract Drawings will be the drawings listed in the drawing index as listed on Drawing No. GI-7902.

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

**PART "H"
CONSTRUCTION INSURANCE SPECIFICATIONS**

CONFORMED CONTRACT NO. R01-T01-H0860

(UNDER SEPARATE COVER)