

Section 01110

SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Summary of the Work including work by the District, District-furnished Products, work sequence, future work, Contractor use of Premises, special conditions for substantial completion and District occupancy.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of the Contract is for construction of
District Landscape Maintenance and Repairs
- B. The Work includes all labor, materials, tools, equipment, mobilization, bonding, permits and fees, data, and all necessary administration and construction support services (including those described in the Division 1 and 2 Specifications), required to prepare the Site and successfully fabricate and install the specified signage and Site Development as described in accordance with the Contract Documents.
 - 1. The Work shall consist of, but shall not be limited to, the following Work items:
 - a) Coordinate with utility owners and governing agencies.
 - b) Project Costs(bonding, insurance, general conditions, mobilization, and miscellaneous costs)
 - c) Provide and maintain required traffic control devices for both City of Houston and TxDOT located street signs. (District has a City of Houston General Mobility Permit that will cover the proposed Scope of Work)
 - d) Apply for and procure all applicable permits from the applicable governing agencies.
 - e) Removal and disposal of existing pavements, pavers, curbs, walls, caps, landscape features and miscellaneous equipment
 - f) Provide and install concrete unit pavers.
 - g) Provide and install concrete pavements all thicknesses.
 - h) Provide and install cast stone wall caps.

1.03 CASH ALLOWANCES

- A. Include the following specific Cash Allowances in Contract Price under provision of General Conditions Paragraph 3.9:
 - 1. Not Applicable

1.04 ALTERNATES

- A. For the following list of Alternates, amount included in Contract Price for only those Alternates accepted by the District and listed in the fully executed Document 00520 – Agreement, Paragraph 3.2:
 - 1. Not Applicable

1.05 DISTRICT-FURNISHED PRODUCTS

- A. Items Furnished by the District for Installation and final connection by Contractor:
 - 1. Not Applicable

- B. Contractor's Responsibilities:
 - 1. Arrange and pay for Product delivery to the site.
 - 2. Receive and unload Products at the site; jointly with the District, inspect for completeness or damage.
 - 3. Handle, store, Install, and finish Products.
 - 4. Repair or replace damaged items.
 - 5. All building permits, and applicable regulatory fees

1.06 WORK SEQUENCE

- A. Construct the Work in Phases during the construction period, coordinate construction schedule and operations with the District:
 - 1. The Contractor shall submit a Construction Schedule for each park for review and approval by the District's Representative with proposed construction phase activities as per Section 01325 – Construction Schedule

- B. Coordination of the Work: Refer to Section 01312 - Coordination and Meetings.

1.07 CONTRACTOR USE OF PREMISES

- A. Comply with procedures for access to the site and Contractor's use of rights-of-way as specified in Section 01145 - Use of Premises.
- B. Construction Operations: Limited to the City of Houston's and/or TxDOT's rights-of-way and/or the District's property as shown or described in the Contract documents.
- C. Utility Outages and Shutdown: Provide a minimum of 48 hours notice to the District and private utility companies (when applicable), excluding weekends and holidays, in advance of required utility shutdown. Coordinate all work as required.

1.08 STREET CUT

- A. Excavations on or under pavement along the District's property in the right-of-way must have a permit. Comply with City of Houston, TxDOT, and/or Harris County for all applicable codes, regulations, and permits required for work relating to excavating in the Public right-of-way.
- B. Comply with the latest edition of the City of Houston's and TxDOT's street cut New Pavement Repair and Pavement Replacement details.
- C. Quantities are included for street cut pavement repair and replacement in applicable Specification sections for Unit Price contracts.
- D. Include payment for street cut pavement repair and replacement in lump sum bid for Stipulated Price contracts.

1.08 WARRANTY

- A. Comply with warranty requirements in accordance with Document 00700 - General Conditions and within the applicable technical specifications sections for each item or trade.

1.09 SPECIAL CONDITIONS FOR SUBSTANTIAL CONDITION

- A. In addition to requirements outlined in Document 00700 – General Conditions, for Contractor to be substantially complete with the Work and call for inspection by District's Representative or Landscape Architect to confirm, the following special conditions must be met or completed:
 - 1. *Draft O&M manuals shall be delivered to Project Manager.*
 - 2. *Training shall be conducted, utilizing draft O&M manuals.*
 - 3. *All Safety related work including pavement stripping, signing and signalization*
 - 4. *All pay items complete report.*
 - 6. *Certificate of Compliance*

7. *Sod Establishment*

- B. No special condition described in Paragraph 1.09 may be included in Contractor's punch list.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01145

USE OF PREMISES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Section includes general use of the site including properties inside and outside of Project Area, work affecting road, ramps, streets and driveways and notification to adjacent occupants.

1.02 PUBLIC RIGHTS-OF-WAY

- A. Excavations on or under pavement along public rights-of-way must have a permit. Comply with City of Houston, TxDOT, and/or Harris County for all applicable codes, regulations, and permits required for work relating to excavating in the Public right-of-way.

1.03 AREA OUTSIDE OF PROJECT AREA LIMIT OF WORK

- A. Altering the condition of properties adjacent to and along the project area and limit of work will not be permitted.
- B. Means, methods, techniques, sequences, or procedures which will result in damage to properties or improvements in the vicinity outside of project area and limit of work will not be permitted.
- C. Any damage to properties outside project area and limit of work shall be repaired or replaced to the satisfaction of the District's Representative and at no cost to the District.

1.04 USE OF SITE

- A. Obtain approvals of governing authorities prior to impeding or closing public roads or streets. Do not close more than two consecutive intersections at one time.
- B. Notify District's at least 48 hours in advance and are the responsibility of the Contractor.
- C. Locate and protect existing and/or adjacent lawn sprinkler systems which may exist on within the site and/or adjacent to the site. Repair or replace damaged systems to condition equal to or better than that existing at start of Work.

- D. Perform daily clean-up of dirt inside and outside the construction zone, and debris, scrap materials, and other disposable items. Keep streets, driveways, and sidewalks clean of dirt, debris and scrap materials. Do not leave building, roads, streets or other construction areas unclean overnight.

1.05 NOTIFICATION TO ADJACENT OCCUPANTS

- A. Notify individual occupants in areas to be effected by the Work of the proposed construction and time schedule. Notification shall be not less than 72 hours or more than 2 weeks prior to work being performed within 200 feet adjacent to Project Area.

1.06 PUBLIC, TEMPORARY, AND CONSTRUCTION ROADS AND RAMPS

- A. Construct and maintain temporary detours, ramps, and roads to provide for normal public traffic flow when use of public roads or streets is closed by necessities of the Work.
- B. Provide mats or other means to prevent overloading or damage to existing roadways from tracked equipment or large or heavy trucks or equipment.
- C. Construct and maintain access roads and parking areas as specified in Section 01504 - Temporary Facilities and Controls.

1.07 USE OF PUBLIC STREETS AND DRIVEWAYS

- A. Avoid needless hindering or inconveniencing public travel on a street or any intersecting alley or street for more than two blocks at any one time, except by permission of the District's Representative.
- B. Remove surplus materials and debris from the project area and adjacent public rights-of-way and streets daily.
- C. Avoid obstructing driveways or entrances to private property.
- D. Provide temporary crossing or complete the excavation and backfill in one continuous operation to minimize the duration of obstruction when excavation is required across drives or entrances.
- E. Provide barricades and signs in accordance with Section VI of the State of Texas Manual on Uniform Traffic Control Devices.

1.08 USE OF DISTRICT PROPERTY

- A. Avoid needless hindering or inconveniencing public use of District Property, except by permission of the District's Representative.

- B. Remove surplus materials and debris from the project area and adjacent public rights-of-way and streets daily.

1.09 TRAFFIC CONTROL

- A. Comply with traffic regulation as specified in Section 01555 - Traffic Control and Regulation.

1.010 SURFACE RESTORATION

- A. Restore any existing site condition existing before construction to satisfaction of the District's Representative, if applicable.
- B. Repair turf areas which become damaged according to 02911 - Topsoil, as approved by the District's Representative and resod in accordance with Section 02922 - Sodding. Water and level newly sodded areas with adjoining turf using steel wheel rollers appropriate for sodding. Do not use spot sodding or sprigging.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

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Section 01230

ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submission procedures.
- B. Documentation of changes to Contract Price and Contract Time.

1.02 RELATED SECTIONS

- A. Instructions to Bidders: Definition of Alternate Bids.
- B. Bid Proposal Form: Quotation of each Bid Alternate.
- C. Agreement Form
- D. Document 00700 - General Conditions
- E. Section 01110 - Summary of Work
- F. Section 01330 - Submittal Procedures: Construction schedule affected by Alternates.

1.03 REQUIREMENTS

- A. Bid Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the sole discretion of the District.
- B. The District Reserves the right to select any, all, or none of the Bid Alternates, or any combination thereof.
- C. Contractor Volunteered Alternates: any Alternate not specified in The Bid Proposal Form, will not be considered.
- D. Accepted Alternates will be identified in the District-Contractor Agreement.

1.04 SELECTION AND AWARD OF ALTERNATIVES

- A. The District reserves the right to evaluate Bids based on the base bid price or any

combination of alternates.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01250

CHANGE ORDER PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for processing Change Orders, including:
 - 1. Assignment of a responsible individual for approval and communication of changes in the Work;
 - 2. Documentation of change in Contract Price and Contract Time;
 - 3. Change procedures, using proposals and construction contract modifications, work change directive, stipulated price change order, unit price change order, time and materials change order;
 - 4. Execution of Change Orders;
 - 5. Correlation of Contractor submittals.

1.02 REFERENCES

- A. Rental Rate Blue Book for Construction Equipment (Data Quest Blue Book). Rental Rate is defined as the full un-adjusted base rental rate for the appropriate item of construction equipment.

1.03 RESPONSIBLE INDIVIDUAL

- A. Contractor shall provide a letter indicating the name and address of the individual authorized to execute change documents, and who shall also be responsible for informing others in Contractor's employ and Subcontractors of changes to the Work. The information shall be provided at the Preconstruction Conference.

1.04 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

- A. Contractor shall maintain detailed records of changes in the Work. Provide full information required for identification and evaluation of proposed changes, and to substantiate costs of changes in the Work.
- B. Contractor shall document each proposal for a change in cost or time with sufficient data

CHANGE ORDER PROCEDURES

- to allow evaluation of the proposal.
- C. Proposals shall include, as a minimum, the following information as applicable:
1. Unit Costs for Change Order Items shall be from the Contractor Submitted Change Order Unit Prices included in the Bid Proposal Form.
 2. When Work items were not included in the Change Order Unit Prices, Contractor shall provide unit prices for the new items, with supporting information as required by the District's Representative and the General Conditions Section 00700.
 3. Justification for any change in Contract Time.
 4. Additional data upon request.
- D. For changes in the Work performed on a time-and-material basis, the following additional information may be required:
1. Quantities and description of products and equipment.
 2. Taxes(if applicable), insurance and bonds.
 3. Overhead and profit as described in Section 00700 - General Conditions.
 4. Dates and times work was performed, and by whom.
 5. Time records and certified copies of applicable payrolls.
 6. Invoices and receipts for products, rented equipment, and subcontracts, similarly documented.
- E. For changes in the work performed on a time-and-materials basis, rental equipment will be paid as follows:
1. Rented equipment will be paid by actual invoice cost for the duration of time required to complete the extra work without markup for overhead and profit. If the extra work comprises only a portion of the rental invoice where the equipment would otherwise be on the site, the Contractor shall compute the hourly equipment rate by dividing the actual monthly invoice by 176. (One day equals 8 hours and one week equals 40 hours.)
 2. Operating costs shall not exceed the estimated operating costs given in the Blue Book for the item of equipment. Overhead and profit will be allowed on operating cost.
- F. For changes in the work performed on a time-and-materials basis using Contractor-owned equipment, use Blue Book rates as follows:
1. Contractor-owned equipment will be paid at the Blue Book Rental Rate for the duration of time required to complete the extra work without markup for overhead and profit. The Rental Rate utilized shall be the lowest cost combination of hourly, daily, weekly or monthly rates. Use 150 percent of the Rental Rate for double shifts (one extra shift per day) and 200 percent of the Rental Rate for more than two shifts per day. Standby rates shall be 50 percent of the appropriate Rental Rate shown in

the Blue Book. No other rate adjustments shall apply.

2. Operating costs shall not exceed the estimated operating costs given in the Blue Book for the item of equipment. Overhead and profit will be allowed on operating cost. Operating costs will not be allowed for equipment on standby.

1.05 CHANGE PROCEDURES

- A. Changes to Contract Price or Contract Time can only be made by issuance of written Change Order. All changes will be in accordance with the requirements of Document 00700 - General Conditions.
- B. The District's Representative or Landscape Architect will advise of minor changes in the Work not involving an adjustment to Contract Price or Contract Time as authorized by the General Conditions by issuing supplemental or Special instructions.
- C. Contractor may request clarification of Drawings, Specifications or Contract Documents or other information by using the enclosed Document - Request for Information contained within the Special Conditions. Response by the District's Representative or Landscape Architect to a Request for Information does not authorize the Contractor to perform tasks outside the scope of the Work. All changes must be authorized as described in this section.

1.06 PROPOSALS AND CONTRACT MODIFICATIONS

- A. The District's Representative or Landscape Architect may issue a Request for Proposal, which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications. The Landscape Architect may also request a proposal in the response to a Request for Information. Contractor shall prepare and submit a proposal within 7 days or as specified in the request.
- B. The Contractor may propose an unsolicited change by submitting a proposal to the District's Representative or Landscape Architect describing the proposed change and its full effect on the Work, with a statement describing the reason for the change and the effect on the Contract Price and Contract Time including full documentation.

1.07 WORK CHANGE DIRECTIVE

- A. District's Representative or Landscape Architect may issue a signed Work Change Directive instructing the Contractor to proceed with a change in the Work. A Work Change Directive will subsequently be incorporated in a Change Order.
- B. The document will describe changes in the Work and will designate a method of determining any change in Contract Price or Contract Time.
- C. Contractor shall proceed promptly to execute the changes in the Work in accordance with the Work Change Directive.

1.08 STIPULATED PRICE CHANGE ORDER

- A. A stipulated price Change Order will be based on an accepted proposal including the Contractor's lump sum price quotation with Schedule of Values.

1.09 CHANGE ORDER UNIT PRICES

- A. Where Change Order Unit Prices for the affected items of Work are included in Bid Proposal Form, the unit price for affected work will be based on the Change Order Unit Prices, subject to Document 00700 - General Conditions.
- B. Where Change Order Unit Prices of Work are not pre-determined in the Bid Proposal Form, the Contractors proposal will specify the unit prices to be used based upon the requirements of this Section and subject to Document 00700 - General Conditions.

1.10 TIME-AND-MATERIAL CHANGE ORDER

- A. Contractor shall provide an itemized account and supporting data after completion of change, within time limits indicated for claims in Document 00700 - General Conditions.
- B. The District's Representative will determine the change allowable in Contract Price and Contract Time as provided in Document 00700 - General Conditions.
- C. Contractor shall maintain detailed records of work done on time-and-material basis as specified in paragraph 1.04.
- D. Contractor shall provide full information required for evaluation of changes and shall substantiate costs for changes in the Work.

1.11 EXECUTION OF CHANGE DOCUMENTATION

- A. The District's Representative will issue Change Orders, Work Change Directives, or accepted proposal for signatures of parties as described in Document 00700 - General Conditions.

1.12 CORRELATION OF CONTRACTOR SUBMITTALS

- A. For Stipulated Price Contracts, Contractor shall promptly revise the Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item.
- B. For Unit Price Contracts, the next monthly estimate of work after acceptance of a Change Order will be revised to include any new items not previously included and the appropriate unit rates.

CHANGE ORDER PROCEDURES

- C. Contractor shall promptly revise progress schedules to reflect any change in Contract Time, and shall revise schedules to adjust time for other items of work affected by the change, and resubmit for review.

Contractor shall promptly enter changes to the on-site and record copies of the Drawings, Specifications or Contract Documents as required in Section 01785 - Project Record Documents.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

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Section 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for measurement and payment plus conditions for nonconformance assessment and nonpayment for rejected Products.

1.02 AUTHORITY

- A. Measurement methods delineated in Specification sections are intended to complement criteria of this Section. In event of conflict, requirements of the Specification section shall govern.
- B. The District's Representative will take all measurements and compute quantities accordingly when applicable.
- C. Assist by providing necessary equipment, workers, and survey personnel.
- D. Measurement and Payment paragraphs are included only in those Specification sections of Division 01 where direct payment will be made. Include costs in the total bid price for those Specification sections in Division 01 that do not contain Measurement and Payment paragraphs,

1.03 UNIT QUANTITIES SPECIFIED

- A. Quantity and measurement estimates stated in the Agreement are for contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the District's Representative will determine payment as stated in Article 9 of Document 00700 - General Conditions.
- B. When actual work requires greater or lesser quantities than those quantities indicated in Document 00410 — Bid Form, provide required quantities at Unit Prices contracted, except as otherwise stated in Article 9 of Document 00700 - General Conditions.

1.04 MEASUREMENT OF QUANTITIES

- A. Measurement by Weight: Reinforcing steel, rolled or formed steel or other metal shapes are measured by CRSI or AISC Manual of Steel Construction weights. Welded assemblies are measured by CRSI or AISC Manual of Steel Construction or scale weights.

B. Measurement by Volume:

1. Stockpiles: Measured by cubic dimension using mean length, width, and height or thickness.
2. Excavation and Embankment Materials: Measured by cubic dimension using average end area method.

C. Measurement by Area: Measured by square dimension using mean length and width or radius.

D. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.

E. Stipulated Price Measurement: By unit designated in the Agreement.

F. Other: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

G. Measurement by Each: Measured by each instance or item provided.

H. Measurement by Lump Sum: Measure includes all associated work.

1.05 PAYMENT

A. Payment includes full compensation for all required supervision, labor, Products, tools, equipment, plant, transportation, services, and incidentals; and erection, application or Installation of an item of the Work; and Contractors overhead and profit.

B. Total compensation for required Unit Price work shall be included in Unit Price bid in Document 00410 — Bid Form. Claims for payment as Unit Price work, but not specifically covered in the list of Unit Prices contained in Document 00410 — Bid Form, will not be accepted.

C. Interim payments for stored materials will be made only for materials to be incorporated under items covered in Unit Prices, unless disallowed in Document 00800 - Supplementary Conditions.

D. Progress payments will be based on Project Manager's observations and evaluations of quantities incorporated in the Work multiplied by Unit Price.

E. Final payment for work governed by Unit Prices will be made on the basis of actual measurements and quantities determined by Project Manager multiplied by the Unit Price for work which is incorporated in or made necessary by the Work.

1.06 NONCONFORMANCE ASSESSMENT

- A. Remove and replace work, or portions of the Work, not conforming to the Contract documents.
- B. When not practical to remove and replace work, District's Representative will direct one of the following remedies:
 - 1. Nonconforming work will remain as is, but Unit Price will be adjusted lower at discretion of District's Representative.
 - 2. Nonconforming work will be modified as authorized by District's Representative, and the Unit Price will be adjusted lower at the discretion of District's Representative, when modified work is deemed less suitable than specified.
- C. Specification sections may modify the above remedies or may identify a specific formula or percentage price reduction.
- D. Authority of District's Representative to assess nonconforming work and identify payment adjustment is final.

1.07 NONPAYMENT FOR REJECTED PRODUCTS

- A. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in an unacceptable manner.
 - 2. Products determined as nonconforming before or after placement.
 - 3. Products not completely unloaded from transporting vehicles.
 - 4. Products placed beyond lines and levels of required work.
 - 5. Products remaining on hand after completion of the Work, unless specified otherwise.
 - 6. Loading, hauling, and disposing of rejected Products.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01292

SCHEDULE OF VALUES

PART I GENERAL

1.01 SECTION INCLUDES

- A. Preparation and submittal of Schedule of Values for Stipulated Price Contracts or for Major Unit Price Work on Unit Price Contracts.

1.02 PREPARATION

- A. For Stipulated Price Contracts, subdivide the Schedule of Values into logical portions of the Work, such as major work items or work in contiguous construction areas. Use Section 01325- Construction Schedule as a guide to subdivision of work items. Directly correlate Items in the Schedule of Values with tasks in the Construction Schedule. Organize each portion using the Project Manual Table of Contents as an outline for listing value of the Work by Sections. A pro rata share of mobilization, Bonds, and insurance may be listed as separate items for each portion of the Work.
- B. For Unit Price Contracts, items should include a proportional share of Contractor's overhead and profit so that total of all items will equal Contract Price.
- C. For lump sum equipment items, where submittal of operation and maintenance data and testing are required, include separate items for equipment operation and maintenance data where:
 - 1. Submittal of maintenance data is valued at five percent of the lump sum amount for each equipment item and
 - 2. Submittal for testing and adjusting is valued at five percent of the lump sum amount for each equipment item.

Round off figures for each item listed to the nearest \$100. Set the value of one item, when necessary, to make total of all values equal the Contract Price for Stipulated Price Contracts or the lump sum amount for Unit Price Work.

1.03 SUBMITTAL

- A. Submit the Schedule of Values, in accordance with requirements of Section 01330 - Submittal Procedures, at least 10 days prior to processing of the first Certificate for

Payment.

- B Submit the Schedule of Values in an approved electronic spreadsheet file and an 8 1/2-inch by 11-inch print on white bond paper.
- C. Revise Schedule of Values for items affected by Contract Modifications. After the District's Representative has reviewed changes, resubmit at least 10 days prior to the next scheduled Certificate for Payment date.

PART2 PRODUCTS-Not Used

PART3 EXECUTION – Not Used

END OF SECTION

Section 01312

COORDINATION AND MEETINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Section includes general coordination including preconstruction conference, site mobilization conference, and progress meetings.

1.02 RELATED DOCUMENTS

- A. Coordination is required throughout the documents. Refer to all of the Contract Documents and coordinate as necessary.

1.03 DISTRICT'S REPRESENTATIVE

- A. The District's Representative is that person so designated by the District to act on its behalf. The District's Representative may be the **Landscape Architect** or another person so designated by the District as defined in the General Conditions and as identified by name at the preconstruction conference.

1.04 CONTRACTOR COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Specifications sections to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify that utility requirement characteristics of operating equipment are compatible with existing or planned utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. Conceal pipes, ducts, and wiring within the construction in finished areas, except as otherwise indicated. Coordinate locations of fixtures and outlets with finish elements.

- E. Coordinate completion and clean up of Work for Substantial Completion and for portions of Work designated for District's partial occupancy.
- F. Coordinate access to site for correction of nonconforming Work to minimize disruption of District's activities where District is in partial occupancy.

1.05 PRECONSTRUCTION CONFERENCE

- A. District's Representative will schedule a preconstruction conference.
- B. Attendance Required: District's representatives, Landscape Architect, Contractor, and major Subcontractors.
- C. Agenda:
 - 1. Distribution of Contract Documents.
 - 2. Designation of personnel representing the parties in Contract, and the Landscape Architect.
 - 3. Review of insurance.
 - 4. Discussion of formats proposed by the Contractor for schedule of values, and construction schedule.
 - 5. Procedures and processing of shop drawings and other submittals, substitutions, pay estimates or applications for payment, Requests for Information, Request for Proposal, Change Orders, and Contract closeout.
 - 6. Scheduling of the Work and coordination with other contractors.
 - 7. Review of Subcontractors.
 - 8. Appropriate agenda items listed for Site Mobilization Conference, paragraph 1.06C, when preconstruction conference and site mobilization conference are combined.
 - 9. Procedures for testing.
 - 10. Procedures for maintaining record documents.

1.06 SITE MOBILIZATION CONFERENCE

- A. When required by the Contract Documents, District's Representative will schedule a conference at the Project site prior to Contractor occupancy.
- B. Attendance Required District's Representative, Landscape Architect, Special Consultants, Contractor's Superintendent, and major Subcontractors.

- C. Agenda:
1. Use of premises by District and Contractor.
 2. Safety and first aid procedures.
 3. Construction controls provided by District.
 4. Temporary utilities.
 5. Survey and layout.
 6. Security and housekeeping procedures.
 7. Field office requirements.

1.07 PROGRESS MEETINGS

- A. Project meetings shall be held at Project field office or other location as designated by the District's Representative. Meeting shall be held at monthly intervals, or more frequent intervals if directed by District's Representative.
- B. Attendance Required: Job superintendent, major Subcontractors and suppliers, District's Representative, and **Landscape Architect** as appropriate to agenda topics for each meeting.
- C. District's Representative or his representative will make arrangements for meetings, and recording minutes.
- D. District's Representative or his representative will prepare the agenda and preside at meetings.
- E. Contractor shall provide required information and be prepared to discuss each agenda item.
- F. Agenda:
1. Review minutes of previous meetings.
 2. Review of Work progress schedule submittal, and pay estimates, payroll and compliance submittals.
 3. Field observations, problems, and decisions.
 4. Identification of problems which impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of RFI and RFP status.
 7. Change order status.
 8. Review of off-site fabrication and delivery schedules.
 9. Maintenance of progress schedule.
 10. Corrective measures to regain projected schedules.

11. Planned progress during succeeding work period.
12. Coordination of projected progress.
13. Maintenance of quality and work standards.
14. Effect of proposed changes on progress schedule and coordination.
15. Other item relating to Work.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

Section 01325

CONSTRUCTION SCHEDULE

PART 1 GENERAL

1.01 GENERAL

- A. Provide Construction Schedules for Work included in this Contract in accordance with requirements in this Section. Create a Construction Schedule using an appropriate computer capable of tracking changes in the Work. Provide printed activity listings and bar charts in formats described in this Section.
- B. Combine activity listings and bar charts with a narrative report to form the Contractor's Construction Schedule submittal for the District's Representative.

1.02 SCHEDULING STAFF

- A. Employ or retain services of an individual experienced in critical path scheduling for the duration of the Contract. This person shall cooperate with the District's Representative and shall update the Contractor's schedule at least monthly as required to indicate current status of the Work.

1.03 SUBMITTALS

- A. Make Construction Schedule submittals for review by the District's Representative in accordance with requirements of Section 01330 - Submittal Procedures.
- B. During the pre-construction meeting, as described in Section 01312 - Coordination and Meetings, provide sample bar charts and activity listings produced from the scheduling software proposed. Scheduling software is subject to approval of the District's Representative and must meet requirements provided in this Section. Review of the samples will be provided by the District's Representative within 7 days of the submittal.
- C. Within 21 days of receipt of approval of the Contractor's format submit a proposed Construction Schedule for review. The Construction Schedule submittal shall be based on the following:
 - 1. The level of detail and number of activities required in the schedule are dependent on the project type.

2. For projects with multiple types of tasks within the scope, these types of work shall be indicated separately within the schedule.
3. For projects with multiple crafts or significant subcontractor components, these elements shall be indicated separately within the schedule. Unless permitted by the District's Representative, tasks shall consist of work covered by only one division of the Project Manual.
4. Unless permitted by the District's Representative, each schedule task shall be the same as a schedule of values line item, and vice versa.
5. For projects with significant major equipment items or materials representing over 5 percent of the Total Contract Price, the schedule shall indicate dates when these items are to be purchased, when they are to be delivered, and when installed. Activities for testing, adjustment, and delivering O & M manuals shall be included.
6. No task except the acquisition of major equipment items shall represent more than one percent of the Total Contract Price for facility projects and 3 percent of the Total Contract Price for other projects. The duration of tasks may not exceed 40 calendar days.
7. Construction Schedule submittals shall include:
 - a. Printed bar charts which meet the criteria outlined in this Section and which are produced by the Contractor's approved scheduling software.
 - b. Activity listings which meet the criteria outlined in this Section and which are produced by the Contractor's approved scheduling software.
 - c. Predecessor/successor listing sorted by Activity ID which meets the criteria outlined in this Section and which is produced by the Contractor's approved scheduling software.
 - d. A logic network diagram shall be required with the first construction schedule submittal for facilities projects.
 - e. A graphic or tabular display of estimated monthly billings for the Work shall be prepared and submitted by the Contractor with the first schedule submittal. This information is not required in monthly updates, unless significant changes in work require resubmittal of the schedule for review. The display shall allocate units indicated in the bid schedule or the schedule of values to Construction Schedule activities. (Weighted allocations are acceptable, where appropriate). The dollar value associated with each allocated unit will be spread across the duration of the activity on a monthly basis. The total for each month and a cumulative total will be indicated. These monthly forecasts are only for planning purposes of the District's Representative. Monthly payments for

actual work completed will be made by the District's Representative in accordance with Document 00700 - General Conditions.

- f. A narrative report which shall provide the information outlined in this Section.
- D. No payment will be made until the Construction Schedule and billing forecast are accepted by the District's Representative.
- E. If the Contractor desires to make changes in his method of operating and scheduling, after approval of the original schedule has been given by the District's Representative, the Contractor shall notify the District's Representative in writing, stating the reasons for the change. If the District's Representative considers these changes to be of significant nature, the Contractor may be required to revise and resubmit for approval all or the affected portion of the Contractor's Construction Schedule to show the effect on the Work.
- F. Upon written request from the District's Representative, the Contractor shall revise and submit for approval all or any part of the Construction Schedule submittal to reflect changed conditions in the Work or deviations made from the original plan and schedule.
- G. The Contractor's Construction Schedule shall thereafter be updated with Actual Start and Actual Finish Dates, Percent Complete, and Remaining Duration of each Activity and submitted monthly. The data date to be used in updating the monthly Construction Schedule shall be the same data date as is used in the monthly Application for Payment. This monthly update of the schedule shall be required before the monthly Application for Payment will be processed for payment.

1.04 SCHEDULING COMPUTER SOFTWARE REQUIREMENTS

- A. The Scheduling software shall be capable of producing activity listings and bar charts with the following information for each activity in the schedule:
 - 1. Activity ID
 - 2. Activity Description
 - 3. Estimated (Original) Duration
 - 4. Remaining Duration
 - 5. Actual Duration
 - 6. Early Start Date
 - 7. Late Start Date
 - 8. Early Finish Date
 - 9. Late Finish Date

- 10. Free Float
 - 11. Total Float
 - 12. Activity Codes (such as Area Code, Work Type, Specification Section, Subcontractor)
- B. The PDM scheduling software shall be capable of printing calendars using the mathematical analysis of the schedule, indicating the Contractor's standard work days of the week and scheduled holidays.
- C. Scheduling software shall be capable of printing an activity listing which indicates the Predecessors and Successors, Lag Factors and Lag Relationships used in creating the logic of the schedule.
- D. Scheduling software shall be capable of printing a bar chart of the entire schedule for the Work included in this Contract. The bar chart format shall provide a monthly time scale and shall be such that a 12-month time scale shall not exceed one page width. Bar charts may be printed or plotted on 8.5" x 11", 8.5" x 14" or 11" x 17" sheet sizes. Over-size plots are not acceptable.

1.05 NARRATIVE SCHEDULE REPORT

- A. The Narrative Report shall include a listing of the Activities Started This Month; Activities Completed This Month; Activities Continued This Month; Activities Scheduled To Start or Complete Next Month; Problems Encountered This Month; Actions Taken to Solve These Problems.
- B. The narrative Schedule Report shall include a description of changes made to the Construction Schedule Logic (i.e., changes in Predecessors and Lags); Activities Added to the Schedule; Activities Deleted from the Schedule; any other changes made to the Schedule other than the addition of Actual Start Dates and Actual Finish Dates and changes of Data Date and Remaining Durations for re-calculation of mathematical analysis.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittal procedures for:
1. Schedule of Values.
 2. Construction Schedules.
 3. Shop Drawings, Product Data, and Samples
 4. Operations and Maintenance Data.
 5. Manufacturer's Certificates.
 6. Construction Photographs.
 7. Project Record Documents.
 8. Video Tapes.
 9. Design Mixes.
 10. Other products and materials specified within the contract documents

1.02 SUBMITTAL PROCEDURES

- A. Scheduling and Handling:
1. Schedule submittals well in advance of the need for the material or equipment for construction. Allow time to make delivery of material or equipment after submittal is approved.
 2. Develop a submittal schedule that allows sufficient time for initial review, correction, resubmission and final review of all submittals. The District's Representative will review and return submittals to the Contractor as expeditiously as possible but the amount of time required for review will vary depending on the complexity and quantity of data submitted. In no case will a submittal schedule be acceptable which allows less than 30 days for initial review by the District's Representative. This time for review shall in no way be justification for delays or additional compensation to the Contractor.
 3. The District's Representative's review of submittals covers only general

conformity to the Drawings, Specifications and dimensions which affect the layout. The Contractor is responsible for quantity determination. No quantities will be verified by the District's Representative. The Contractor is responsible for any errors, omissions or deviations from the Contract requirements; review of submittals in no way relieves the Contractor from his obligation to furnish required items according to the Drawings and Specifications.

4. Submit five (5) copies of documents unless otherwise specified in the following paragraphs or in the Specifications.
5. Revise and resubmit submittals as required. Identify all changes made since previous submittal.
6. The Contractor shall assume the risk for material or equipment which is fabricated or delivered prior to approval. No material or equipment shall be incorporated into the Work or included in periodic progress payments until approval has been obtained in the specified manner.

B. Transmittal Form and Numbering:

1. Transmit each submittal to the District's Representative with a Transmittal Form. A copy of the Transmittal Form is attached.
2. Sequentially number each transmittal form beginning with the number 1. Resubmittals shall use the original number with an alphabetic suffix (i.e., 2A for first resubmittal of Submittal 2 or 15C for third resubmittal of Submittal 15). Each submittal shall only contain one type of work, material, or equipment. Mixed submittals will not be accepted.
3. Identify variations from requirements of Contract Documents and identify product or system limitations.
4. For submittal numbering of video tapes, see paragraph 1.10 Video.

C. Contractor's Stamp:

1. Apply Contractor's stamp, certifying that the items have been reviewed in detail and are correct and in accordance with Contract Documents, except as noted by any requested variance.
2. As a minimum, Contractor's Stamp shall include:
 - a. Contractor's name.
 - b. Job number.
 - c. Submittal number.
 - d. Certification statement that the Contractor has reviewed the submittal and it is in compliance with the Contract Documents.
 - e. Signature line for Contractor.

1.03 SCHEDULE OF VALUES

- A. Submit a Schedule of Values in accordance with Section 01292 - Schedule of Values.

1.04 CONSTRUCTION SCHEDULES

- A. Submit Construction Schedules as provided in Project Manual.

1.05 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- A. Submit shop drawings in accordance with Section 01340 - Shop Drawings, Product Data, and Samples.

1.06 OPERATIONS AND MAINTENANCE DATA

- A. Submit Operations and Maintenance data in accordance with Section 01782 - Operations and Maintenance Data.

1.07 MANUFACTURER'S CERTIFICATES

- A. When specified in Specification sections, submit manufacturers' certificate of compliance for review by District's Representative.
- B. Contractor's Stamp, as described in paragraph 1.02C, shall be placed on front page of the certification.
- C. Submit supporting reference data, affidavits, and certifications as appropriate.
- D. Certificates may be recent or previous test results on material or product, but must be acceptable to District's Representative.

1.08 CONSTRUCTION PHOTOGRAPHS

- A. Submit Construction Photographs in accordance with Section 01321 - Construction Photographs.

1.09 PROJECT RECORD DOCUMENTS

- A. Submit Project Record Documents in accordance with Section 01785 - Project Record Documents.

1.10 DESIGN MIXES

- A. When specified in Specifications, submit design mixes for review.

- B. Contractor's Stamp, as described in paragraph 1.02C, shall be placed on front page of each design mix.
- C. Mark each design mix to identify proportions, gradations, and additives for each class and type of design mix submitted. Include applicable test results on samples for each mix.
- D. Maintain a copy of approved design mixes at mixing plant.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01340

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Methods, schedule, and process to be followed for shop drawings, product data and sample submittals.

1.02 REQUIREMENT

- A. Submit shop drawings, product data and samples as required by the General Conditions and as designated in the Specifications using the procedures specified in Section 01330 - Submittal Procedures and the requirements of this Section.
- B. Shop drawings, product data and samples are not considered Contract Documents.

1.03 SHOP DRAWING/SUBMITTAL SCHEDULE

- A. Submit a separate Shop Drawing/Submittal schedule at the same time the construction schedule is submitted. List products, materials and equipment for which Shop Drawings and other submittals are required in the order in which they appear in the Specifications. Including product data and sample submittals in schedule.

1.04 SHOP DRAWINGS

- A. Submit shop drawings for review as required by the Specifications. Have shop drawings reviewed and signed by a registered professional.
- B. Place Contractor's Stamp on each drawing as described in Section 01330 - Submittal Procedures.
- C. On the drawings, show accurately and distinctly, the following:
 - 1. Field and erection dimensions clearly identified as such;
 - 2. Arrangement and section views;
 - 3. Relation to adjacent materials or structure, including complete information for making connections between work under this Contract and work under other contracts;

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

4. Kinds of materials and finishes;
 5. Parts list and descriptions;
 6. Assembly drawings of equipment components and accessories showing their respective positions and relationships to the complete equipment package;
 7. Where necessary for clarity, identify details by reference to drawing sheet and detail numbers, schedule or room numbers as shown on the Contract Drawings.
- D. Make drawings to scale providing a true representation of the specific equipment or item to be furnished.

1.05 PRODUCT DATA

- A. Submit product data for review as required in Specification sections.
- B. Place Contractor's Stamp, on each data item submitted, as described in Section 01330 - Submittal Procedures.
- C. Mark each copy to identify applicable products, models, options to be used in this Project. Supplement manufacturers' standard data to provide information unique to this Project, where required by the Specifications.
- D. For products specified only by reference standard, give manufacturers, trade name, model or catalog designation and applicable reference standard.
- E. Preapproved and Prequalified Products.
 1. For "preapproved", "prequalified" and "approved" products named in the products list, provide appropriate list designation as described in Section 01630 - Product Substitution Procedures within 30 days after Notice to Proceed.
 2. For products proposed as alternates to "approved" products, provide information required to demonstrate the proposed products meet the level of quality and performance criteria of the "approved product".

1.06 SAMPLES

- A. Submit samples for review as required by the Specifications. Have samples reviewed and signed by a registered professional.
- B. Place Contractor's Stamp on each sample or a firmly attached sheet of paper, as described in Section 01330 - Submittal Procedures.
- C. Submit the number of samples specified in Specifications; one of which will be retained by the Authority's Representative.
- D. Reviewed samples which may be used in the Work are identified in Specifications.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

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Section 01422

REFERENCE STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Section includes general quality assurance as related to Reference Standards and a list of references.

1.02 QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on the date as stated in the General Conditions.
- C. Request clarification from District's Representative before proceeding should specified reference standards conflict with Contract Documents.

1.03 SCHEDULE OF REFERENCES

AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute P.O. Box 9094 Farmington Hills, MI 48333-9094
AGC	Associated General Contractors of America 1957 E Street, N.W. Washington, DC 20006

REFERENCE STANDARDS

AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWS	American Welding Society P.O. Box 35104 Miami, FL 33135
COH	City of Houston 900 Bagby Street P.O. Box 1562 Houston, TX 77251-1562
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Road Schaumburg, IL 60173-4758
EJMA	Expansion Joint Manufacturers Association 707 Westchester Avenue White Plains, NY 10604

REFERENCE STANDARDS

FS	Federal Standardization Documents General Services Administration Specifications Unit (WFSIS) 7th and D Streets, S.W. Washington, DC 20406
ICEA	Insulated Cable Engineer Association P.O. Box 440 S. Yarmouth, MA 02664
IEEE	Institute of Electrical and Electronics Engineers 445 Hoes Lane P.O. Box 1331 Piscataway, NJ 0855-1331
ISA	International Society of Arboriculture 303 West University P.O. Box GG Savoy, IL 61874
MIL	Military Specifications General Services Administration Specifications Unit (WFSIS) 7th and D Streets, S.W. Washington, DC 20406
NEMA	National Electrical Manufacturers' Association 2101 L Street, N.W., Suite 300 Washington, DC 20037
OSHA	Occupational Safety Health Administration U.S. Department of Labor Government Printing Office Washington, DC 20402
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077-1083
SSPC	Steel Structures Painting Council 4400 Fifth Avenue Pittsburgh, PA 15213

REFERENCE STANDARDS

TAC	Texas Administrative Code Texas Water Commission P. O. Box 13087, Capitol Station Austin, TX 78711-3087
TxDOT	Texas Department of Transportation 11th and Brazos Austin, TX 78701 2483
TMUTCD	Texas Manual on Uniform Traffic Control Devices.
TRANSTAR	Houston TRANSTAR 6922 Katy Road Houston, TX 77024 (713) 881-3000
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062

(Other references as included in other specifications sections)

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

CONTRACTOR'S QUALITY CONTROL

Section 01450

CONTRACTOR'S QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance and control of installation and manufacturer's field services and reports.

1.02 MEASUREMENT AND PAYMENT

- A. No payment will be made for this item. Include the cost of Contractor's quality control in overhead cost for this project for a Stipulated Sum Price Contract.

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' installation instructions, including each step in sequence.
- C. Request clarification from District's Representative before proceeding should manufacturers' instructions conflict with Contract Documents.
- D. Comply with specified standards as minimum requirements for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce the specified level of workmanship.

1.04 REFERENCES

- A. Obtain copies of standards and maintain at job site when required by individual Specification sections.

1.05 MANUFACTURERS' FIELD SERVICES AND REPORTS

CONTRACTOR'S QUALITY CONTROL

- A. When specified in individual Specification sections, provide material or product suppliers' or manufacturers' technical representative to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, operator training, test, adjust, and balance of equipment as applicable, and to initiate operation, as required. Conform to minimum time requirements for start-up operations and operator training if defined in Specification sections.
- B. At the District's Representative's request, submit qualifications of manufacturer's representative to District's Representative 15 days in advance of required representative's services. The representative shall be subject to approval of District's Representative.
- C. Manufacturer's representative shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions. Submit report within 14 days of observation to District's Representative for review.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01502

MOBILIZATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Mobilization of construction equipment and facilities onto the site.

1.02 MEASUREMENT AND PAYMENT

- A. Measurement for mobilization is on a lump sum basis.
- B. Mobilization payments will be included in monthly payment estimates upon written application by Contractor subject to the following provisions:
 - 1. Authorization for payment of 50 percent of the contract price so designated for mobilization will be made upon receipt and approval by District's Representative's Representative of the following items, as applicable:
 - a. Schedule of values. (Section 01292)
 - b. Construction schedule(Section 01325)
 - c. Pre-construction photographs. (Section 01321, if requested)
 - d. Establishment of the field office for the District's Representative's Representative where an office is required by other sections, if applicable.
 - e. Traffic Control Plan, if required.
 - f. Project Signs Submittal(Section 01580)
 - g. Submittal Schedule(Section 01330)
 - h. Site Utilization Plan(Section 01145)
 - 2. Authorization for payment of the remaining 50 percent of the Contract Price for mobilization will be made upon completion of Work amounting to 5 percent of the Contract Price less the mobilization unit price.
- C. Mobilization payments will be subject to retainage amounts stipulated in the General Conditions, Section 00700.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

TRAFFIC CONTROL AND REGULATION

Section 01555

TRAFFIC CONTROL AND REGULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for signs, signals, control devices, flares, lights and traffic signals, as well as construction parking control, designated haul routes and bridging of trenches and excavations within each governmental jurisdiction.
- B. Requirement for and qualifications of flagmen.

1.02 SUBMITTALS

- A. City of Houston traffic control plans and details are incorporated into the Drawings. If the Contractor proposes to close traffic lanes then the Contractor is required to implement traffic control plans responsive to the Texas Manual on Uniform Traffic Control Devices (TMUTCD).
- B. For both the traffic control plan and flagmen use, submit schedules of values within 30 days following the Notice to Proceed. Refer to Section 01292 - Schedule of Values.
- C. The Contractor shall provide such information and records regarding the use of qualified flagmen to verify that the Contractor's use of A peace officers as flagmen is in compliance with the Contract Documents and Texas law, including but not limited to, Article 4413 (29bb), commonly referred to as the Private Investigators and Private Security Agencies Act, and Article 2.12, Texas Code of Criminal Procedure.
- D. The Contractor shall provide such information and records regarding the use of qualified flagmen to verify that the Contractor's use of A certified flagmen as flagmen is in compliance with the Contract Documents and applicable District ordinance.
- E. Traffic control requirements for work within TxDOT rights-of-way shall be according to TxDOT standard traffic control procedures.
- F. Make submittals in accordance with Section 01330 - Submittal Procedures.

1.03 MEASUREMENT AND PAYMENT

- A. Traffic Control and Regulation. Measurement is on a lump sum basis for traffic control and regulation, including submittal of a traffic control plan if different from the plan shown on the Drawings, provision of traffic control devices, and provision of equipment

TRAFFIC CONTROL AND REGULATION

and personnel as necessary to protect the work and the public. The amount invoiced shall be determined based on the schedule of values submitted for traffic control and regulation.

- B. **Flagmen.** Measurement is on a lump sum basis for flagmen as required for the Project. The amount invoiced shall be determined based on the schedule of values submitted for flagmen.

1.04 FLAGMEN

- A. Use flagmen, qualified as described under paragraph 1.04.B, Uniformed Peace Officers, or paragraph 1.04.C, Certified Flagmen, to control, regulate, and direct the even flow or movement of vehicular or pedestrian traffic when construction operations encroach on public traffic lanes.

- B. Uniformed Peace Officer: A person who has full-time employment as a peace officer and who receives compensation as a flagman for private employment as an individual employee or independent contractor. Private employment may be either an employee-employer relationship or on an individual basis. A flagman may not be in the employ of another peace officer and may not be a reserve peace officer.

1. A peace officer is defined as:
 - a. Sheriffs and their deputies;
 - b. Constables and deputy constables;
 - c. Marshals or police officers of an incorporated District, town, or village; or
 - d. As otherwise provided by Article 2.12, Code of Criminal Procedure, as amended.
2. A person who has full-time employment as a peace officer is one who is actively employed in a full-time capacity as a peace officer working, on average, a minimum of 32 paid hours per week, being paid at a rate of pay not less than the prevailing minimum hourly wage rate as set by the federal Wage and Hour Act and entitled to the full benefits of participation in any retirement plan, vacation, holidays, and insurance benefits. A reserve peace officer does not qualify, under this definition, as a peace officer.

- C. Certified Flagman: A person who receives compensation as a flagman and who meets the following qualifications and requirements:

2. Required to wear a distinctive uniform, bright-colored vest, and be equipped with appropriate flagging and communication devices.
3. English speaking, with Spanish as an advantageous, but not required, primary or secondary language.
5. Required to carry proof of training / certification, such as photographic identification card issued by the training institute, to allow the District's

TRAFFIC CONTROL AND REGULATION

Representative to easily determine that necessary full-time traffic control is actually provided, when and where construction work encroaches upon traffic lanes.

PART 2 PRODUCTS

2.01 SIGNS, SIGNALS, AND DEVICES

- A. Comply with Texas State Manual on Uniform Traffic Control Devices.
- B. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.

PART 3 EXECUTION

3.01 PUBLIC ROADS

- A. Abide by laws and regulations of governing authorities when using public roads. If the Contractor's work requires that public roads be temporarily impeded or closed, approvals shall be obtained from governing authorities and permits paid for before starting any work. Coordinate activities with the District Representative.
- B. Contractor shall maintain at all times a 10-foot-wide all-weather lane adjacent to work areas which shall be kept free of construction equipment and debris and shall be for the use of emergency vehicles, or as otherwise provided in the traffic control plan.
- C. Contractor shall not obstruct the normal flow of traffic from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. on designated major arterials or as directed by the District Representative.
- D. Contractor shall maintain local driveway access to residential and commercial properties adjacent to work areas at all times.
- E. Cleanliness of Surrounding Streets:
 - 1. Keep streets used for entering or leaving the job area free of excavated material, debris, and any foreign material resulting from construction operations. Comply with Authority of Houston Ordinance No. 5705, Construction or Demolishing Privileges.

3.02 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and District's operations.
- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non designated areas.

TRAFFIC CONTROL AND REGULATION

3.03 PUBLIC SIDEWALKS

- A. If it is necessary to block existing public sidewalks, the Contractor must adhere to the City of Houston's sidewalk ordinance and submit for and secure all necessary permits.
- B. All costs for sidewalk closure permits shall be the responsibility of the Contractor.

3.04 FLARES AND LIGHTS

- A. Provide flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

3.05 TRAFFIC SIGNS AND SIGNALS

- A. Install traffic control devices at approaches to the site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- B. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
- C. Relocate traffic signs and signals as Work progresses to maintain effective traffic control.

3.06 REMOVAL

- A. Remove equipment and devices when no longer required.
- B. Repair damage caused by installation.
- C. Remove post settings to a depth of 2 feet.

3.07 GOVERNMENTAL JURISDICTION

- A. Contractor shall maintain the required traffic control procedures for the specific jurisdiction in which the wayfinding signage resides.

END OF SECTION

Section 01562

TREE AND PLANT PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tree and plant protection.
- B. Minimum qualifications of Arborist and Urban Forester.

1.02 DESCRIPTION OF WORK

- A. This section specifies the requirements for tree preservation tree preservation techniques for those trees indicated on the drawings. Contractor to protect and insure welfare of all existing trees, indicated on the Drawings to remain both within the Tree Preservation Zone (“TPZ”), as later described herein, and within all adjacent areas used for access to construction site. Contractor to furnish and supply all equipment and personnel necessary for continued protection of tree and planting areas.
- B. All trees within the public property and/or street rights-of-way, or immediately adjacent to or overhanging the construction area shall be preserved, unless otherwise noted on the drawings.
- C. Trees to be preserved shall be protected from all construction to include, but are not limited to, excavation and fill activities, sidewalk and automobile pavement, subgrade liming, boring and/or trenching, utility work, construction equipment, construction materials, construction staging, and construction spoils.
- D. Refer to the Drawings for any areas that require TPZ fencing. TPZ fencing shall remain in place for the duration of the Work.
- E. The Contractor is responsible for any damages caused by the Contractor to trees either within, or immediately adjacent to the TPZ penalties for damage caused by the contractor to trees or areas selected by Owner’s representative. Contractor shall be directly responsible for protection and welfare of existing trees within and around the TPZ which are noted to remain. This responsibility shall continue throughout the full construction period until the entire Project is completed and accepted by the Owner and through completion of the guarantee period and shall include but not be limited to providing all barricades as required and providing protection from mechanical damage, soil compaction, pollution from all sources, and disruption of environmental support which would result in the loss of vigor of said plantings. Contractor shall not take any action foreseeable leading to the death of a tree or permanent damage to its health, including but not limited to excessive pruning, cutting, girdling, poisoning, over watering, unauthorized relocation or transportation of a tree, or machine trenching, excavating, altering the grade, or

paving within the root zone of a tree. Exceptions deemed necessary shall be done under the guidance and review of a licensed arborist and with approval from the Owner.

1.03 PERSONNEL QUALIFICATIONS

- A. Contractor shall employ an experienced Certified Arborist for all specimen tree pruning activities specified herein, with a minimum of five (5) years experience in this type of work. The arborist's qualifications shall be submitted to the Landscape Architect for approval, three (3) weeks prior to start of work.
- B. All tree trimming and work involving tree roots required to protect trees shall be performed by or under the supervision of a qualified tree surgeon or urban forester, or certified arborist

1.04 DEFINITIONS

- A. Tree Preservation Zone (“TPZ”) means the area that is outlined with temporary fencing, or as identified by the Landscape Architect, to identify the critical root zone areas. The extent of the TPZ may extend beyond the trees drip line.
- B. Drip Line means the area around the tree trunk as measured 4’-0” above ground. The distance of the drip line from the perimeter of the trunk shall be 1’-0” for every 1” of tree trunk caliper or the vertical distance to the furthest extent of the tree crown (foliage) whichever is greater. For example, a tree with a 30” caliper shall have a drip line that is 30’-0” (60’-0” diameter) from the trunk perimeter unless the tree crown extends beyond 30’-0” in which case this dimension would be used.
- C. Certified Arborist means a person who has successfully completed the International Society of Arboriculture certification process, or who is a member of the American Society of Consulting Arborists.
- D. Root Flare (or collar) is the area at the base of the tree at the ground line which is noticeable as an increased ‘swelling’ of the tree trunk.
- E. Injury is defined, without limitation, as any bruising, scarring, tearing, or breaking of roots, branches, or trunk.
- F. Root zone is defined as the greater of 5 times the diameter of the trunk as a radius or the outermost limits of the tree canopy.
- G. Landscape Architect (LA) is a licensed Landscape Architect or a representative as designated by the LA.

1.05 WARRANTY

- A. Contractor shall warrant that all trees covered by the provisions of this Section will be healthy and in flourishing condition of active growth 1 year from the date of Substantial Completion.

- B. During the warranty period the Contractor shall be liable for damages to all trees covered by the provisions of this Section and shall pay compensation to the City. If a tree to remain is destroyed, or damaged so that in the judgment of the City's Representative or the City it should be replaced, it shall be removed at Contractor's expense and shall closely match size, color, and variety of damaged plantings. If replacement plant materials are not available or desired by the City, liquidated damages will be assessed at the value of the tree as determined by ISA formula.
- C. Contractor will not be held responsible for failures due to neglect by the City, vandalism, etc., during the warranty period only if such conditions are reported immediately to the Landscape Architect and the damage is documented.

1.06 JOB CONDITIONS

- A. The Contractor shall visit the site and review the site conditions thoroughly
- B. The survey information provided is intended to identify the locations and sizes of each tree to be preserved. The Contractor shall verify all existing site conditions prior to initiating work.

1.07 SUBMITTALS

- A. Conform to requirements of Section 01330 – Submittal Procedures.
- B. Submit name and experience of certified Arborist, proposed for use on the Work.

1.08 PROJECT CONDITIONS

- A. Preserve and protect existing trees and plants to remain from foliage, branch, trunk, or root damage that could result from construction operations.
- B. Prevent the following types of damage:
 - 1. Compaction of root zone by foot or vehicular traffic, or material storage.
 - 2. Trunk damage from equipment operations, material storage, or from nailing or bolting.
 - 3. Trunk and branch damage caused by ropes or guy wires.
 - 4. Root or soil contamination from spilled solvents, gasoline, paint, lime slurry, and other noxious materials.
 - 5. Branch damage due to improper pruning or trimming.
 - 6. Damage from lack of water due to:

- a. Cutting or altering natural water migration patterns near root zones.
- b. Failure to provide adequate watering
7. Damage from alteration of soil pH factor caused by depositing lime, concrete, plaster, or other base materials near roots zones.
8. Cutting of roots larger than one inch in diameter.

1.09 DAMAGE ASSESSMENT

- A. When trees other than those designated for removal are destroyed or damaged as result of construction operations, remove and replace with same size, species, and variety up to and including 8 inches in trunk diameter. Trees larger than 8 inches in diameter shall be replaced with an 8 inch diameter tree of the same species and variety and total contract amount will be reduced by an amount determined from the following formula and paid to Tree Fund $0.7854 \times D^2 \times \13.25 where D is diameter in inches of tree or shrub trunk measured 12 inches above grade for that portion of the tree which is greater than 8 inches in diameter. A permit must be applied for and approved by the Owner of Houston, Urban Forestry Division prior to removal of any tree not scheduled for removal in the tree treatment schedule. Contractor shall contact Owner of Houston, Urban Forestry, at 832-395-8459 to apply for tree removal permit when needed.

1.10 MEASUREMENT AND PAYMENT

- A. **TREE PRUNING**, Payment for tree pruning and miscellaneous care, shall be for on a per occurrence basis per the sizes noted on the Bid Form.
 1. Payment for tree/palm removal shall be on a per occurrence basis for the size noted and shall include all materials, stump grinding below 1'-6" of finished grade, topsoil backfill, site restoration, equipment, debris hauling, as needed to remove the existing tree.
 2. Payment for tree pruning and maintenance shall be on a per occurrence basis and shall include all labor and material necessary to conduct the maintenance activities proposed for each existing tree. The level and detail of required maintenance activities may vary from tree to tree, but the unit price shall be an average amount across all trees that require maintenance.
- B. Refer to Section 01270-Measurement and Payment for unit price procedures.

PART 2 PRODUCTS

2.01 MACHINERY

- A. **Trenchers**: Shall be capable of cutting trenches between four and six inches (4-6") in width and to a minimum depth of eighteen inches (18"). Trenchers shall be of a kind suitable for root pruning operations and be capable of making clean, surgical cuts of tree roots

- B. Chain Saws: Shall be sharp. Guide bars shall be true and straight. Cutting width of chain saw shall be at least 1/3 greater than branches to be cut, so as to facilitate even, clean cuts.
- C. Shears and Hand Trimming Tools: Shall be sharp and free of rust. All cutting tools shall be double-bladed, shear type. "Anvil" type pruners or loppers will not be an acceptable pruning equipment. The appropriate pruning instrument shall be used for the size of branch being removed.
- D. All machinery specified herein shall be in good working order and free of any leaking parts.

2.02 TREE PRESERVATION FENCING

- A. Materials - The fencing material shall be made out of a high visibility, UV resistant, gridded, orange plastic. The fencing material shall be a minimum of 4'-0" in height. Poles shall be constructed out of 6' X 5/8" diameter flexible, fiberglass poles or other approved materials, spaced no more than 10'-0" o.c. Approved fencing shall extend a minimum of 2'-0" into the ground. Attach fencing to poles with plastic strap ties.
- B. Duration - The TPZ fencing shall be in place for the duration of construction activities.

2.03 MULCH

- A. Organic mulch free from deleterious materials and suitable for topdressing. Mulch shall be composed of well-rotted shredded hardwood bark mulch, black or dark brown in color.

2.04 TOPSOIL

- A. Friable, enriched organic, sandy clay loam soil free of clay, rock or gravel larger than 1/2" in diameter, debris waste, vegetation, and other deleterious matter.

2.05 ROOT BARRIER

- A. The root control barrier shall be an injection molded or extruded modular component made of high density polypropylene or polyethylene plastic.
- B. Panels shall measure 24" inches in depth with a mean thickness of 0.08".
- C. Plastic shall be recyclable and contain ultra-violet inhibitors.
- D. Not less than four raised ribs protruding 1/2" from the face of the panel and running from top to bottom thereof. Each rib or root guide will have an anti-compaction cap at its tip, perpendicular to the rib, parallel to the face of the barrier and running the length of the rib thereby forming root nurturing channels. The distance between the guides shall not exceed 6".

- E. Each panel shall have an integral male/female sliding lock, the male down the length of one side and the female down the length of the other.

San Jacinto Environmental Supplies
Attention: Greg Cooper
Houston, Texas
(713) 957-0909.

2.06 PLASTIC ROOT/SOIL PROTECTION

- A. 6 mil. Polyethylene plastic sheething.
- B. Clear or white sheething. Black is not allowed.

2.07 INSECTICIDES

- A. Lawn and Garden Spray with Spinosad as manufacture by Green Lights Products Co., San Antonio, TX, 78217-0985, Tel(210)494-3481, Fax(210) 494-5224.
- B. Pine Shoot Moth: "Metasystox" or "Orthene"
- C. Larvae: "Sevin"

2.08 PRUNING PAINT

- A. Black latex, water based paint, free of all petroleum products.

2.09 FERTILIZERS

- A. Fertilizer: Fertilizer shall be a root stimulant that contains at a minimum the following ingredients: Ectomycorrhizal Fungi, VA Mycorrhizal (VAM) Fungi, Rhizosphere Bacillus spp., Kelp Meal Humic Acid, and Soluble Yucca.
- B. Rhizanova as manufactured by Becker Underwood Inc. Ames, Louisiana(515)232-5907
Available locally from:
San Jacinto Environmental Supplies
Attention: Greg Cooper
Houston, Texas
(713) 957-0909.

PART 3 EXECUTION

3.01 PROTECTION OF EXISTING TREES AND SHRUBS

- A. Notify Project arborist forty-eight (48) hours prior to commencement of any construction activities within the tree preservation areas.
- B. Site preparation work and/or construction work shall not begin in any area where tree preservation measures have not been completed and approved.
- C. Protect exposed roots and root zone areas from contamination from stabilization materials and concrete using polyethylene.
- D. Cover exposed roots within four (4) hours to reduce damage caused by desiccation. Roots may be covered with soil, mulch, polyethylene, or wet burlap to help protect them from drying.
- E. Designate limited areas as concrete washout areas. Locate concrete washout areas away from root zones.
- F. Install root pruning trenching where designated in tree treatment schedule and shown on the tree protection drawings. Trees scheduled for root pruning are called out specifically in the treatment schedule. Trench shall be located 2 ft. from the edge of proposed waterline or sanitary sewer for trees called out for root pruning for water or fittings, or sanitary sewer in the treatment schedule, 2 ft. from edge of proposed storm sewer pipe for trees called out for root pruning for storm in the treatment schedule, 30" back of proposed curb for trees called out for root pruning for street, and at edge of sidewalk for trees called out for root pruning for sidewalk. Root pruning shall not be performed where there is not adequate space to be located sufficiently away from tree to prevent damage. All pruning must be evaluated by Contractor's Certified Arborist and reviewed and approved by Project arborist before being performed. Trench locations shown on tree preservation plan are drawn to scale and should be located in field as drawn on plan. Exact locations shall be approved in the field by engineer and/or project urban forester prior to installation. Trenching depth shall be a minimum of 2 ft. deep and a maximum of 6 inches wide for water, fittings, sanitary sewer, storm, and street. Trenching depth shall be to the anticipated bottom of sidewalk and base material for sidewalk root pruning, roots lower than sidewalk shall not be pruned. All roots shall be cut by trencher, chainsaw, or handsaw to the specified depth. Roots shall be cut cleanly, and or not ripped, torn, or chopped. Trench shall be backfilled and compacted immediately after trenching. Trench shall be installed prior to any clearing and grubbing, excavation for underground, or any other site work.

3.02 TREE PROTECTION FENCING

- A. Install tree protection fencing around each tree to be preserved as indicated in the tree treatment schedule and on the tree protection plan.
 - 1. Each tree to be preserved shall be protected with a tree protection fence. The fencing shall be continuous between posts, shall be pulled taut prior to securing to posts, and shall be firmly attached to the posts with a minimum of 4 wire ties.

2. The fencing shall be located three (3) feet outside of the tree, or group of trees, drip line or as indicated on the drawings.
3. All tree protection fencing shall be installed prior to site work or construction activity. The fence shall be placed in a continuous alignment as shown on the tree protection plan. Fences shown on tree protection plan are drawn to scale and shall be installed as drawn, in the field. In general fences shall be placed 30" back of existing curb or edge of pavement where root pruning or zero curb cutback is not specified, and 6" back of root pruning trench where root pruning is specified and immediately back of curb where zero curb cutback is specified. Exact locations shall be approved by the project urban forester and/or engineer in the field. The Fences shall be placed to protect roots, trunks, and foliage. The contractor shall not remove or relocate tree protection fencing and shall not operate within the limits shown without direct approval of the project urban forester. In areas where the proposed waterline is located in the existing road side ditch and where tree protection fencing can not be installed across the ditch, the fencing shall be installed at the top of outside ditch bank and no bore pits, peep holes, service taps, or any excavation should occur in the area immediately in front of the tree protection fencing for trees called out with "bore" in the Tree Treatment Schedule. The "bore" limits shall be the same as the limits of the tree protection fencing.
4. Storage of equipment or materials will not be allowed inside a fence. Entryways and access into a protected area shall not be provided unless approved by the project urban forester.
5. Damage to tree fences occurring during the progress of the work shall be repaired immediately at no additional cost to owner. Workmen shall be clearly instructed to exercise caution in performance of work near trees being preserved.
6. Tree protection fencing shall be removed by contractor, at no additional costs, upon completion of all construction activity in each work zone area. Tree protection fencing materials used in the first two work zone areas shall be removed and utilized in subsequent work zone areas. Materials and labor shall be paid for each linear foot of fencing installed in first two work areas. All fencing installed in subsequent work zone areas shall be paid for labor only.
7. Prohibited activities within tree protection fencing
 - a) Storage or parking of vehicles and/or construction equipment
 - b) Storage of construction materials of any type including, but not limited to petroleum products, concrete mixes, dirty water, lime, and gravel.
 - c) Storage of excavation spoils and/or fill materials.
 - d) Construction spoils including, but not limited to concrete washout, paint thinners and excess petroleum products, lime, or any other material which may be deleterious to the trees.

- e) Cutting of tree roots due to utility trenching, digging, placement of curbs or other construction activities.
- f) Any soil disturbance due to stripping existing topsoil or added fill soil
- g) Use of trees as support posts, anchorage, power poles, or signposts; anchorage for ropes, guy wires, or power lines; or other similar functions either permanent or temporary.
- h) Damage to trunk, limbs, or foliage caused by maneuvering vehicles or stacking material or equipment too close to the tree.
- i) Excessive water or heat from equipment, utility line construction, or burning of trash under or near bushes or trees.
- j) Damage to root system from flooding, erosion, puddling or continuous running water, and excessive wetting and drying resulting from dewatering and other operations.
- k) Skinning or bruising of bark.

3.03 BORING/AUGURING OF WATER LINES OR SANITARY SEWER LINES

- A. Water line or sanitary sewer line shall be bored/augured/ horizontally drilled under critical root zones areas of trees designated with auger or bore in the tree treatment schedule. The entire area protected with tree protection fencing shall be bored. No bore pits, come through holes, peep holes, push pits, or long or short side service taps shall be allowed in the areas protected by tree protection fencing. The tree protection plan takes into consideration the limits of augering equipment, there should be room for adequately spaced bore pits, peep holes, come through holes, and push pits. Any changes to the location of the tree protection fencing shall be authorized by the project Arborist and Owner Engineer.
- B. Hand digging of Service taps and leads
 - 1. Trees called out for Hand dig short side service tap are located in very close proximity to existing short side water meters. Excavating the service tap with machinery would significantly impact the tree and be in violation of the Owner of Houston's Street Tree Ordinance. These short side service taps shall be excavated with manual labor to expose any roots 1" in diameter and larger. The first 24" of excavation shall be completed manually to expose the roots. Any root 1" in diameter and larger shall remain undamaged, the roots shall not be cut , nor shall the bark and cambium layer be scraped or damaged. Once the roots are exposed, if there is adequate room to utilize a mini-excavator without damaging the roots, the mini-excavator can be utilized to complete the excavation down to the water line. 1" plywood shall be placed on grade to provide root protection in the area of access of the mini-excavator. If roots 1" diameter or larger are cut or damaged, responsible party will be subject to a citation under the Street Tree Ordinance, and may also be required to incur the cost of tree removal and replacement of damaged tree on an inch for inch basis, if required by Owner of Houston Urban Forestry Division.

2. Trees called out for Hand dig short side or long side service lead are located in very close proximity to existing water meters. Excavating the service lead with machinery would significantly impact the tree and be in violation of the City of Houston's Street Tree Ordinance. Short side leads shall be excavated with manual labor to expose any roots 1" in diameter and larger from the service tap of the meter. Come out hole and excavation required for long service leads shall be excavated with manual labor to expose roots 1" in diameter and larger, from the come out hole to the meter. In each case, all roots 1" in diameter and larger shall remain undamaged, the roots shall not be cut, nor shall the bark and cambium layer be scraped or damaged. If roots 1" diameter or larger are cut or damaged, responsible party will be subject to a citation under the cost of tree removal and replacement of damaged tree on an inch by inch basis, if required by Owner of Houston Urban Forestry Division.
3. Trees called out for Hand dig sanitary stub up are located in very close proximity to proposed service lead. Excavating the service lead with machinery would significantly impact the tree and be in violation of the Owner of Houston's Street Tree Ordinance. Excavation for sanitary stub up shall be completed with manual labor to expose any roots 1" in diameter and larger. The lead shall be bored from face of curb to stub up hole when called out in the tree treatment schedule. Come out and stub up holes shall be excavated with manual labor to expose roots 1" in diameter and larger. In case, all roots 1" in diameter and larger shall remain undamaged, the roots shall not be cut, nor shall the bark and cambium layer be scraped or damaged. If roots 1" diameter or larger are cut or damaged, responsible party will be subject to a citation under the Street Tree Ordinance, and may be required to incur the cost of tree removal and replacement of damaged tree on an inch by inch basis, if required by Owner of Houston Urban Forestry Division.
4. Long side service taps shall not be located in an area specified to be bored in the tree treatment schedule. Should it be absolutely necessary to locate a long side service tap in an area specified to be bored, the excavation shall be completed as specified in paragraph 1 of this section-Hand digging short side service taps.
5. All water meters and sanitary service leads called out on P&P drawings and visible in the field have been addressed in the Tree Protection Plan. Should any additional meters or lead be found during construction, or in any new meters or leads installed beneath the canopy of any tree, fenced for tree protection, the excavation shall be completed as specified in paragraph 1 and/or 2 of this section and paid for at the unit cost for each included in contract.

3.04 PRUNING OF TREES

- A. Trees shall be pruned in accordance with the American National Standard for tree pruning, ANSI A300 (Part 1) – 2001 Pruning Revision of ANSI A300-1995 Tree, Shrub and Other Woody Plant Maintenance – Standard Practices. Pruning shall be completed by professional arborists who has received training in proper pruning techniques.

- B. **Raise Canopy:** (Clearance prune designated trees for public streets, sidewalks, and construction areas). Provide a minimum seven (7) feet of clearance above sidewalks and adjacent pedestrian pavements. No more than 1/3 of the tree canopy shall be pruned. Prune consistently around the tree crown and not just on the side of a pedestrian sidewalk. Contractor shall notify property owner prior to trimming or pruning any trees with trunks located on private property. Exceptions will be made for trees determined to be arboriculturally significant by Owner of Houston Urban Forestry. Pruning of trees identified will be completed with approval and supervision of Owner of Houston Urban Forestry.
- C. **Clean Crown:** Crown cleaning prune designated trees shall include selective removal of dead, diseased, and/or broken limbs.
- D. **Reduce Canopy:** Where noted on the drawings and tree maintenance schedule, reduce canopy to avoid overhead utility lines and or obstructions. No more than 1/3 of the tree canopy shall be pruned. Prune consistently around the tree crown and not just on the side of a pedestrian sidewalk.
- E. All cuts should be made sufficiently close to the parent limb or trunk without cutting into the branch collar or leaving a protruding stub, so that closure can readily start under normal conditions. All lateral cuts shall be made to a lateral that is least 1/3 the diameter of the parent limb. Clean cuts shall be made at all times.
- F. Trees shall be pruned in a manner that will not destroy or alter the natural shape and character of the tree. Apply black latex paint to all fresh wounds on Oak (*Quercus*) species immediately after each cut is made.

3.05 TREE REMOVAL

- A. Trees scheduled for removal shall be sawed down and debris hauled from the site the same day. The stump shall be ground to twelve (12) inches below grade and excess grindings shall be hauled from the site the same day, so that a pile of grindings is not left where the stump was ground. Enough grindings should be left so that an open hole does not remain.
- B. Only those trees called out for removal in the Tree Treatment Schedule shall be removed, or otherwise damaged. Should it be determined that any additional trees must be removed, a permit must be applied for and approved from the Owner of Houston Urban Forestry Division prior to removal. Contractor shall contact Urban Forestry at 832-395-8459.
- C. The Contractor shall notify the Project arborist or Owner Engineer immediately if the Contractor has identified a dead and damaged tree(s) that was not previously identified on the Drawings. The Contractor shall provide a station and offset dimension, or other appropriate means of locating the tree(s) location and the reason for the proposed removal. The Project Arborist shall make a determination as to the potential of restoration of the

tree(s) to normal growth pattern shall be removed. The Contractor shall not remove any tree without written permission from the Project Arborist and Owner Urban Forester.

3.06 ROOT STIMULATION

- A. Deep root stimulate designated trees. Mix fertilizer with wetting agent per label instructions.
- B. Stimulate entire root zone area within the dripline of the tree and continue 10 feet beyond the dripline, leaving out areas of anticipated root loss (construction areas).
- C. Mixture shall be injected into the top 10 inches of soil under pressure of 150 to 200 psi as soil conditions warrant.
- D. Mix in a tank with agitation capability per label instructions. Inject the mixture on a 2.5 ft. square grid at 4 lbs, actual nitrogen per 1,000 sq. ft.

3.07 SUPPLEMENTAL TREE WATERING

- A. Regularly water trees which have received root damage, to eliminate additional stress caused by lack of moisture. Water during periods without adequate rainfall. For example, should 1.0" of rain not be received within a week period, the trees should be thoroughly watered. March through September, water once every two weeks. October through February, water every three weeks. Water thoroughly to saturate the entire root zone area.

3.08 PESTICIDE APPLICATION

- A. Chemically treat tree trunks with evidence of borer activity with the appropriate approved insecticide mixed and applied per the manufacturer's product application recommendations. Trees shall be sprayed within 24 hours after observance of borer activity.
- B. Pesticide applications shall be conducted by a licensed applicator.
- C. Application of pesticides shall be conducted under the supervisions of a Certified Arborist.
- D. If pruning activities occur between May and August, the a treatment of an approved e pesticide shall be used to control potential borer insect damage.
- E. Trees with evidence of other insect problems shall be treated with Durzban or other approved insecticide.
- F. All insecticides shall be applied at the manufacturer's recommended rate.

3.09 GRADING AND FILLING AROUND TREES

- A. Maintain existing grade within the dripline of trees, unless otherwise indicated.

- B. Where existing grade around trees is above new finish grade, under supervision of project urban forester, carefully hand excavate within the dripline to make transition to new finish grade.
- C. Where existing grade is below new finish grade, place clean bank sand in a single layer to make the transition to new grade. Do not compact; hand grade to required elevation. Specifically to areas where proposed curb is higher than existing and backfill will be required.

3.10 DEMOLITION, FORMING AND POURING SIDEWALKS (SIDEWALK ON GRADE)

A. Removal of Sidewalk Pavements

1. Demolition of existing sidewalks, located in or adjacent to the limits of tree protection fencing, shall be completed without disturbing, cutting, or otherwise damaging tree roots and soil located beneath them.
2. Existing sidewalk pavements\ shall be broken up by hand or with a hand operated jackhammer. Truck and/or backhoe mounted equipment shall not be used.
3. Sidewalk debris shall be removed to a vehicle that is outside of the TPZ. No construction debris shall be stored or placed in the TPZ.
4. If the sidewalk is to be replaced, do not remove any existing base material. If the sidewalk is to be abandoned and converted to a landscape area, existing base material should be removed unless it is interwoven with tree roots then the base material should remain.
5. Two (2) inches of hardwood bark mulch shall be applied to the areas where existing sidewalk pavement has been removed for the duration of construction, or as directed by the Landscape Architect. This practice is to prevent inadvertent soil compaction and help in moisture retention.

B. Placement of New Pavements

1. The new sidewalk shall be formed at or above the elevation of the existing sidewalk, without disturbing, cutting or otherwise damaging tree roots. Every effort has been made to address tree root and sidewalk elevation issues with information available in the field and on plan and profile sheets. The elevation of every tree root was not available, if tree roots are found to be in conflict with proposed sidewalk, project engineer and urban forester shall be consulted as to how to install sidewalks with minimal impacts to adjacent trees.
2. Checkerplate shall be installed in areas called out only if tree root elevations prohibit construction of ADA compliant sloped concrete sidewalks. Checkerplate shall be installed per detail.

3.11 ZERO CURB CUTBACK

- A. Disturbance of tree roots or soil behind the existing and/or proposed curb within root zones of trees designated for zero curb cutback shall be prohibited. If the curb can not be removed without disturbing soil or damaging roots back of curb when using equipment for demolition, the curb shall be broken using a hand held jackhammer and removed by hand.
- B. The exposed roots and soil shall be covered immediately after demolition with 6 mil polyethylene in order to avoid desiccation, and contamination by the lime used for road bed stabilization. The polyethylene shall be placed so that it covers the vertical face of soil back of curb and laid back onto the grade 12 inches back of curb. The polyethylene should remain in place, across the entire area specified for zero curb cutback, from the time the existing curb is demolished until the time when the new curb is formed and backfilled. The polyethylene can be pulled up from the vertical face while the road bed is being graded or mixed, to avoid catching the plastic with machinery, but shall be replaced immediately after equipment has completed. The vertical face shall not be exposed for more than 8 hours in any 24 hour period.
- C. There shall be no stabilization back of curb in the zero curb cutback areas, or forming with steel forms. The existing grade and roots back of existing curb shall not be disturbed. This may require forming of the new street with wooden forms with stakes inside forms, which may require leaving the forms in place after the street is poured. Should wooden forms be utilized, the wood shall be at minimum a 2x6. The new curb may require hand finishing, as a slip curb machine may not have adequate clearance without disturbing the roots that are to be protected with the zero curb cutback.
- D. Roots extending into the street, or on top of the existing curb, in areas to paved shall be cut and removed by hand prior to disturbance or removal with equipment. Roots shall be pruned flush with the proposed back of curb. Roots one inch in diameter and larger shall be cut in a manner to provide a smooth, clean cut surface. Cuts shall be made with the appropriate pruning shears or pruning saws. Roots shall not be chopped or broken.
- E. In areas where proposed curb will be may be lower than existing top of curb and tree roots 2” diameter or larger are present, the soil and roots shall not be graded or laid back. The existing elevation shall be maintained and the curb formed to meet elevation or a short elevation difference roots and top of curb maintained.

3.12 DEMOLITION, FORMING AND POURING OF DRIVE WAY APPROACHES

- A. Demolition of existing driveway approaches located beneath the dripline of any tree shall be completed without disturbing, cutting, or otherwise damaging tree roots and soil located beneath them.

- B. The new approach shall be formed at or above the elevation of the existing approach where tree roots 2" diameter or larger are present, without disturbing, cutting or otherwise damaging tree roots. Maximum drive slopes may be needed at bottom of apron to allow forming of drive over tree roots at top of drive. As with sidewalks, the elevation of every tree roots was not available in design. If tree roots are found to be in conflict with proposed approach, project engineer and urban forester shall be consulted as to how to install drive way with minimal impacts to adjacent trees.

3.13 REPLACEMENT TREES FOR TREE REMOVALS UNDER ORDINANCE

- A. Location, species, and size of replacement trees are indicated on the drawings. Contractor shall layout individual trees at locations shown on drawings. Contractor shall layout individual trees at locations shown on drawings and be responsible for utility locate requirements. In case of conflicts, notify Owner Engineer and Owner Urban Forestry before proceeding with work. Trees shall be laid out and locations approved by Owner Engineer prior to planting.
- B. Trees shall meet and be planted according to Owner of Houston Standard Specification 02915.

3.14. ARBORIST AND URBAN FORESTER QUALIFICATIONS

- A. Arborist – Employ qualified arborist acceptable to Owner's Parks and Recreation Department to complete all tree treatments. Arborist shall be normally engaged in the field and have a minimum of five (5) years experience. Qualifications of the selected arborist shall be submitted for review and approval by the project engineer and Owner of Houston.
- B. Urban Forester – An Urban forester shall be hired to monitor and assist with field layout (exact locations of fencing, root pruning, and zero curb cutback) of the tree preservation program during demolition and construction to ensure tree protection procedures and techniques are practiced as specified to address concerns and conditions which occur in the field. At a minimum, the individual responsible for monitoring and field layout of the tree protection shall have a minimum of five (5) years of experience as a consultant, and shall not be affiliated with a tree care contractor in the Houston area. Qualifications of the selected urban forester shall be submitted for review and approval by the project engineer and Owner of Houston Urban Forestry Department.

END OF SECTION

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Section 01576

WASTE MATERIAL DISPOSAL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Disposal of waste material and salvageable material.

1.02 UNIT PRICES

- A. No separate payment will be made for waste material disposal under this Section. Include payment in the Total Stipulated Price.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of Section 01330 - Submittal Procedures.
- B. Obtain and submit disposal permits for proposed disposal sites if required by local ordinances.
- C. Carefully remove existing signage to be replaced and present to City of Houston Public Works for potential salvage. If The City of Houston declines rights of first salvage then the Contractor shall dispose of in accordance with this section.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 EXCESS MATERIAL

- A. Vegetation, rubble, broken concrete, foundations, debris, landscape, topsoil, asphaltic concrete pavement, excess soil, and other materials not designated for salvage, shall

become the property of Contractor and shall be removed from the job site and legally disposed of.

- B. Sign blades, fittings, attachment straps, fasteners, guy wires, foundations, and misc. not scheduled for salvage, reuse, or to be salvaged by the City of Houston
- C. Waste materials shall be removed from the site on a daily basis, such that the site is maintained in a neat and orderly condition.

END OF SECTION

Section 01610

BASIC PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for transportation, delivery, handling, and storage of materials and equipment.

1.02 PRODUCTS

- A. Products: Means material, equipment, or systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components designated for reuse.
- B. Do not reuse materials and equipment, designated to be removed, except as specified by the Contract Documents or as directed by the District's Representative
- C. Provide equipment and components from the fewest number of manufacturers as is practical, in order to simplify spare parts inventory and to allow for maximum interchangeability of components. For multiple components of the same size, type or application, use the same make and model of component throughout the project.

1.03 TRANSPORTATION

- A. Make arrangements for transportation, delivery, and handling of equipment and materials required for timely completion of the Work.
- B. Transport and handle products in accordance with instructions.
- C. Consign and address shipping documents to the proper party giving name of Project, street number, and District. Shipments shall be delivered to the Contractor.

1.04 DELIVERY

- A. Arrange deliveries of products to accommodate the short term site completion schedules and in ample time to facilitate inspection prior to installation. Avoid deliveries that cause lengthy storage or overburden of limited storage space.
- B. Coordinate deliveries to avoid conflict with Work and conditions at the site and to accommodate the following:

BASIC PRODUCT REQUIREMENTS

1. Work of other contractors or the District.
 2. Limitations of storage space.
 3. Availability of equipment and personnel for handling products.
 4. District's use of premises.
- C. Have products delivered to the site in manufacturer's original, unopened, labeled containers.
- D. Immediately upon delivery, inspect shipment to assure:
1. Product complies with requirements of Contract Documents.
 2. Quantities are correct.
 3. Containers and packages are intact; labels are legible.
 4. Products are properly protected and undamaged.

1.05 PRODUCT HANDLING

- A. Coordinate the off-loading of materials and equipment delivered to the job site. If necessary to move stored materials and equipment during construction, Contractor shall relocate materials and equipment at no additional cost to the District.
- B. Provide equipment and personnel necessary to handle products, including those provided by the District, by methods to prevent damage to products or packaging.
- C. Provide additional protection during handling as necessary to prevent breaking, scraping, marring, or otherwise damaging products or surrounding areas.
- D. Handle products by methods to prevent over bending or overstressing.
- E. Lift heavy components only at designated lifting points.
- F. Handle materials and equipment in accordance with Manufacturer's recommendations.
- G. Do not drop, roll, or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

1.06 STORAGE OF MATERIAL

- A. Store and protect materials in accordance with manufacturer's recommendations and requirements of these Specifications.
- B. Make necessary provisions for safe storage of materials and equipment. Place loose soil materials, and materials to be incorporated into the Work to prevent damage to any part of the Work or existing facilities and to maintain free access at all times to all parts of the Work and to utility service company installations in the vicinity of the Work. Keep materials and equipment neatly and compactly stored in locations that will cause a minimum of inconvenience to other contractors, public travel, adjoining owners, tenants,

BASIC PRODUCT REQUIREMENTS

- and occupants. Arrange storage in a manner to provide easy access for inspection.
- C. Restrict storage to areas available on the construction site for storage of material and equipment as shown on Drawings or approved by the District's Representative.
 - D. Provide off-site storage and protection when on-site storage is not adequate.
 - E. Do not use lawns, grass plots, or other private property for storage purposes without written permission of the District or other person in possession or control of such premises.
 - F. Protect stored materials and equipment against loss or damage.
 - G. Store in manufacturers' unopened containers.
 - H. Materials delivered and stored along the line of the Work shall be neatly, safely, and compactly stacked along the work site in such manner as to cause the least inconvenience and damage to property owners and the general public, and shall be not closer than 3 feet to any fire hydrant. Public and private drives and street crossings shall be kept open.
 - I. Damage to lawns, sidewalks, streets or other improvements shall be repaired or replaced to the satisfaction of the District's Representative and that of the property owner.

PART 2 P R O D U C T S - Not Used

PART 3 E X E C U T I O N - Not Used

END OF SECTION

BASIC PRODUCT REQUIREMENTS

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Section 01630

PRODUCT SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Options for making product or process selections.
- B. Procedures for proposing equivalent construction products or processes, including preapproved, prequalified, and approved products or processes.

1.02 DEFINITIONS

- A. Product: Means materials, equipment, or systems incorporated into the Project. Product does not include machinery and equipment used for production, fabrication, conveying, and erection of the Work. Products may also include existing materials or components designated for reuse.
- B. Process: Any proprietary system or method for installing system components resulting in an integral, functioning part of the Work. For this Section, the word Product includes Processes.

1.03 SELECTION OPTIONS

- A. Preapproved Products: Construction products of certain manufacturers or suppliers designated in the Specifications as "preapproved." A list of preapproved products is maintained by the District. Preapproved products for this Project are designated as preapproved in the Specifications. Products of other manufacturers or suppliers will not be acceptable for this Project and will not be considered under the submittal process for approving alternate products.
- B. Prequalified Products: Construction products of certain manufacturers or suppliers designated in the Specifications as "prequalified." Prequalified products for this Project are designated as prequalified in the Specifications. Products of other manufacturers or suppliers will not be acceptable for this Project and will not be considered under the submittal process for approving alternate products.
- C. Approved Products: Construction products or processes of certain manufacturers or suppliers designated in the Specifications followed by the words "or approved equal." Approval of alternate products or processes not listed in the Specifications may be obtained

PRODUCT SUBSTITUTION PROCEDURES

through provisions for product options and substitutions in Document 00700 - General Conditions, and by following the submittal procedures specified in 01330- Submittal Procedures. The procedure for approval of alternate products is not applicable to preapproved or prequalified products.

- D. Product Compatibility: To the maximum extent possible, provide products that are of the same type or function from a single manufacturer, make, or source. Where more than one choice is available as a Contractor's option, select a product which is compatible with other products already selected, specified, or in use by the District.

1.04 CONTRACTOR'S RESPONSIBILITY

- A. The Contractor's responsibility related to product options and substitutions is defined in Document 00700 - General Conditions.
- B. Furnish information the District's Representative deems necessary to judge equivalency of the alternate product.
- C. Pay for laboratory testing, as well as any other review or examination costs, needed to establish the equivalency between products in order to obtain information upon which the District's Representative can base a decision.
- D. If the District's Representative determines that an alternate product is not equal to that named in the Specifications, the Contractor shall furnish one of the specified products.

1.05 DISTRICT'S REPRESENTATIVE'S REVIEW

- A. Alternate products or processes may be used only if approved in writing by the District's Representative. The District's Representative's determination regarding acceptance of a proposed alternate product is final.
- B. Alternate products will be accepted if the product is judged by the District's Representative to be equivalent to the specified product or to offer substantial benefit to the District.
- C. The District retains the right to accept any product or process deemed advantageous to the District, and similarly, to reject any product or process deemed not beneficial to the District.

1.06 SUBSTITUTION PROCEDURE

- A. Collect and assemble technical information applicable to the proposed product to aid in determining equivalency as related to the approved product specified.
- B. Submit a written request for a construction product to be considered as an alternate product.
- C. Submit the product information after the effective date of the Agreement and within the time period allowed for substitution submittals given in Document 00700 - General Conditions. After the submittal period has expired, requests for alternate products will be considered only when a specified product becomes unavailable because of conditions

PRODUCT SUBSTITUTION PROCEDURES

- beyond the Contractor's control.
- D. Submit 5 copies of each request for alternate product approval. Include the following information:
1. Complete data substantiating compliance of proposed substitution with Contract Documents.
 2. For products:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature with product description, performance and test data, and reference standards.
 - c. Samples, as applicable.
 - d. Name and address of similar projects on which product was used and date of installation. Include the name of the District, Architect/Engineer, and installing contractor.
 2. For construction methods:
 - a. Detailed description of proposed method.
 - b. Drawings illustrating methods
 3. Itemized comparison of proposed substitution with product or method specified.
 4. Data relating to changes in construction schedule.
 5. Relation to separate contracts, if any.
 6. Accurate cost data on proposed substitution in comparison with product or method specified.
 7. Other information requested by the District's Representative.
- E. Approved alternate products will be subject to the same review process as the specified product would have been for shop drawings, product data, and samples.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

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Section 01731

CUTTING AND PATCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cutting, patching and fitting of the Work or Work under construction and to existing facilities and to accommodate the coordination installation or connection of Work with existing facilities, or to uncover work for access, inspection or testing and related submittals. Demolition is specified elsewhere.

1.02 CUTTING AND PATCHING

- A. Perform activities to avoid interference with facility operations and the Work of others in accordance with the Document 00700 - General Conditions of the Contract.
- B. Execute cutting and patching, including excavation, backfill and fitting to:
 - 1. Remove and replace defective Work or Work not conforming to the Drawings and Specifications.
 - 2. Take samples of installed Work as required for testing.
 - 3. Remove construction required to provide for specified alteration or addition to existing work.
 - 4. Uncover Work to provide for inspection or reinspection of covered Work by the District's Representative or regulatory agencies having jurisdiction.
 - 5. Connect any Work that was not accomplished in the proper sequence to completed Work.
 - 6. Remove or relocate existing utilities and pipes which obstruct Work to which connections must be made.
 - 7. Make connections or alterations to existing or new facilities.
- C. Restore existing work to a state equal to or better than that prior to cutting and patching. Restore new Work to standards of these Specifications.
- D. Support, anchor, attach, match, trim and seal materials to the Work of others. Unless otherwise specified, furnish and install sleeves, inserts, hangers, required for the execution of the Work.
- E. Provide shoring, bracing and support as required to maintain structural integrity and protect adjacent Work from damage during cutting and patching. Before cutting beams or other structural members, anchors, lintels or other supports, request written instructions from the District's Representative. Follow such instructions, as applicable.

1.03 SUBMITTALS

- A. Submit written notice to the District's Representative requesting consent to proceed prior to cutting which may affect structural integrity or design function, City operations, or work of another contractor.

- B. Include the following in submittal:
 - 1. Identification of project.
 - 2. Description of affected Work.
 - 3. Necessity for cutting.
 - 4. Effect on other work and on structural integrity.
 - 5. Include description of proposed Work:
 - a. Scope of cutting and patching.
 - b. Contractor, subcontractor or trade to execute Work.
 - c. Products proposed to be used.
 - d. Extent of refinishing.
 - e. Schedule of operations.
 - f. Alternatives to cutting and patching, if any.
- C. Should conditions of Work or schedule indicate change of materials or methods, submit a written recommendation to the District's Representative including:
 - 1. Conditions indicating change.
 - 2. Recommendations for alternative materials or methods.
 - 3. Submittals as required for substitutions.
- D. Submit written notice to the District's Representative designating time Work will be uncovered for observation. Do not begin cutting or patching operations until authorized by the District's Representative.

1.04 CONNECTIONS TO EXISTING FACILITIES

- A. Perform construction necessary to complete connections and tie-ins to existing facilities. Keep all existing facilities in continuous operation unless otherwise specifically permitted in these Specifications or approved by the District's Representative.
- B. Submit a detailed schedule of proposed connections, including shut-downs and tie-ins. Include in the submittal the proposed time and date as well as the anticipated duration of the Work. Submit the detailed schedule coordinated with the construction schedule.
 - 1. Provide specific time and date information to the District's Representative 48 hours in advance of proposed Work.
- C. Procedures and Operations:
 - 1. The Contractor shall operate existing pumps, valves and gates required for sequencing procedures under the supervision of the District's Representative. Do not operate any valve, gate or other item of equipment without the knowledge of the District's Representative.
 - 2. Insofar as possible, equipment shall be tested and in operating condition before final tie-ins are made to connect equipment to the existing facility.
 - 3. Carefully coordinate Work and schedules. Provide written notice to the District's Representative at least 48 hours before shutdowns or bypasses are required.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

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RESTORATION OF SITE IMPROVEMENTS

Section 01740

RESTORATION OF SITE IMPROVEMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Restoration of the Work site in Project Work Area or easements and adjacent public or private property affected by construction operations, including pavement, esplanades, sidewalks, driveways, fences, lawns and landscaping.

1.02 MEASUREMENT AND PAYMENT

- A. Unit Price.
 - 1. No separate payment will be made for site restoration efforts, include cost with the appropriate related pay item.
 - 2. Refer to Section 01270 – Measurement and Payment for Unit Price procedure
- B. Stipulated Price (Lump Sum) Contracts. If Contract is Stipulated Sum Price include payment for work under this section in Total Stipulated Sum Price.

1.03 REFERENCES

- A. ANSI Z60.1. American Standard for Nursery Stock.

1.04 DEFINITIONS

- A. Site Restoration. Replacement or reconstruction of site improvements to the Project Work Area, public rights-of-way, easements, public property, and private property that are affected or altered by construction operations, with the improvements restored to a condition which is equal to, or better than, that which existed prior to construction operations.
- B. Site Improvements. Includes but is not limited to pavement, curb and gutter, esplanades, sidewalks, driveways, fences, fences, lawns, irrigation systems, signage, and landscaping.

1.05 SUBMITTALS

- A. Make submittals in conformance with Section 01330 - Submittal Procedures.

1.06 QUALITY ASSURANCE

RESTORATION OF SITE IMPROVEMENTS

- A. Have landscape plantings planted by qualified personnel.

1.07 SCHEDULING

- A. After paving or utility work is completed on a line segment and the segment is submitted on the monthly estimate for payment, complete site restoration for that segment before the next monthly estimate for payment is submitted, unless extended in writing by the Owner's Representative.

1.08 WARRANTY

- A. Provide a one year warranty on plants and grasses that die due to shock or damage.
- B. Replace plants that fail during the warranty period according to the specifications governing the original plants.
- C. Contractor to provide a written notification to homeowner stating that homeowner is responsible for watering replaced plants and grasses.
- D. Damage caused by natural hazards such as hail, high winds or storm is not covered by the warranty.
- E. Existing plant material required to be moved on the site are covered under the warranty.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Pavement, Sidewalks and Driveways. Use materials as specified in Section 0775 - Sidewalks
- B. Seeding and Sodding. Provide sod as specified in Section 02922 - Sodding. For areas to be seeded, conform to Section 02921 - Hydromulch Seeding.
- C. Landscape Plantings, Trees and Shrubs. Provide trees, shrubs and plants of quantity, size, genus, species and variety of those being replaced and complying with recommendations and requirements of ANSI Z60.1.

PART 3 EXECUTION

3.01 EXAMINATION

RESTORATION OF SITE IMPROVEMENTS

- A. Construction Site Photographs. Document conditions on and adjacent to the construction site with construction photographs as specified Section 01321 - Construction Photographs.

3.02 PREPARATION

- A. Removing Pavements and Structures.
1. Remove the minimum pavement, curb and gutter, and other structures as required to perform the Work. Perform removals in accordance with Section 02221 – Site Demolition.
 2. Remove concrete and asphaltic concrete material using sawed joints in accordance with Section 02775 – Concrete Sidewalks
- B. Remove or relocate existing fencing, if required, for construction operations. Maintain the integrity of the private property owner’s fencing if needed for protection of children, pets or property. Notify the property owner 72 hours in advance before removing fencing and coordinate security needs.

3.03 INSTALLATION

- A. Pavement, Sidewalk, and Driveway Restoration.
1. Replace pavement, curb and gutter, sidewalks, and driveways removed or damaged as the result of construction operations. Reconstruct in accordance with Section 02775 – Concrete Sidewalks
 2. Where replacement sidewalks terminate at a street curb radius, construct a wheelchair ramp according to **City of Houston** Standard Detail Drawing Wheel Chair Ramp Details.
- B. Seeding and Sodding.
1. Clean up construction debris and level the area with bank sand so that the resulting surface of the new grass matches the level of the existing grass and maintains pre-construction drainage patterns. Level minor ruts or depressions caused by construction operations where grass is still viable by filling with bank sand.
 2. Restore grass areas disturbed or damaged by construction with grass comparable with that previously existing.
 3. Restore established lawn areas, including easements and esplanades disturbed or damaged by construction, by sodding and fertilizing in accordance with Section 02922 - Sodding, except that measurement and payment shall be as specified in this Section.

RESTORATION OF SITE IMPROVEMENTS

4. Restore grass areas not requiring sodding using hydromulch methods in accordance with Section 02921 - Hydromulch Seeding, except that measurement and payment shall be as specified in this Section.
- C. Trees, Shrubbery and Plants.
1. Extra care shall be taken in removing and replanting trees, shrubbery and plants. Trees, shrubbery and plants shall be removed in a way that leaves soil around the roots. Trees, shrubbery and plants shall be placed outside of excavation area.
 2. Replace in kind any trees, shrubbery, and plants removed or damaged by construction operations according to Section 02950 – Planting
- D. Fence Removal and Replacement.
1. Replace fencing removed or damaged, including, but not limited to, posts, caps, concrete footings, concrete curb under fence, wire mesh, wood panels, top and bottom railing.
 2. Reconstruct any portion of the fence disturbed by construction which is not equal to or better than that which existed prior to construction operations as evidenced by preconstruction photographs or videos.
 3. Remove and dispose of damaged or substandard material.
- 3.04 CLEANING
- A. Remove debris and trash which is the result of the Contractor's operation to maintain a clean and orderly site.
- 3.05 MAINTENANCE
- A. Maintain plantings, sodded areas and seeded areas through warranty period.
- B. Replace plantings and seeded or sodded areas that fail to become established through the warranty period.
- C. Maintain plantings as follows:
1. Initial watering shall be by Contractor. Continued maintenance shall be by land owner.
 2. Repair or replace bracing as necessary.
 3. Prune as necessary.
- D. If it is necessary to remove tree branches, have removal and other necessary pruning performed by an qualified nursery or landscape firm utilizing best standard practices.

END OF SECTION

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Section 01755

STARTING SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting and balancing

1.02 CUTTING AND PATCHING

- A. Perform activities to avoid interference with facility operations and the Work of others in accordance with the Document 00700 - General Conditions of the Contract.
- B. Execute cutting and patching, including excavation, backfill and fitting to:
 - 1. Remove and replace defective Work or Work not conforming to the Drawings and Specifications.
 - 2. Take samples of installed Work as required for testing.
 - 3. Remove construction required to provide for specified alteration or addition to existing work.
 - 4. Uncover Work to provide for inspection or reinspection of covered Work by the **District's** Representative or regulatory agencies having jurisdiction.
 - 5. Connect any Work that was not accomplished in the proper sequence to completed Work.
 - 6. Remove or relocate existing utilities and pipes which obstruct Work to which connections must be made.
 - 7. Make connections or alterations to existing or new facilities.
- C. Restore existing work to a state equal to or better than that prior to cutting and patching. Restore new Work to standards of these Specifications.
- D. Support, anchor, attach, match, trim and seal materials to the Work of others. Unless otherwise

specified, furnish and install sleeves, inserts, hangers, required for the execution of the Work.

- E. Provide shoring, bracing and support as required to maintain structural integrity and protect adjacent Work from damage during cutting and patching. Before cutting beams or other structural members, anchors, lintels or other supports, request written instructions from the **District** 's Representative. Follow such instructions, as applicable.

1.03 SUBMITTALS

- A. Submit written notice to the **District** 's Representative requesting consent to proceed prior to cutting which may affect structural integrity or design function, **City of Houston**, or Texas Department of Transportation's, or Harris County operations, or work of another contractor.
- B. Include the following in submittal:
 - 1. Identification of project.
 - 2. Description of affected Work.
 - 3. Necessity for cutting.
 - 4. Effect on other work and on structural integrity.
 - 5. Include description of proposed Work:
 - a. Scope of cutting and patching.
 - b. Contractor, subcontractor or trade to execute Work.
 - c. Products proposed to be used.
 - d. Extent of refinishing.
 - e. Schedule of operations.
 - f. Alternatives to cutting and patching, if any.
- C. Should conditions of Work or schedule indicate change of materials or methods, submit a written recommendation to the **District** 's Representative including:
 - 1. Conditions indicating change.
 - 2. Recommendations for alternative materials or methods.
 - 3. Submittals as required for substitutions.
- D. Submit written notice to the **District** 's Representative designating time Work will be uncovered for observation. Do not begin cutting or patching operations until authorized by the **District** 's Representative.

1.04 CONNECTIONS TO EXISTING FACILITIES

- A. Perform construction necessary to complete connections and tie-ins to existing facilities.

- Keep all existing facilities in continuous operation unless otherwise specifically permitted in these Specifications or approved by the **District's** Representative.
- B. Submit a detailed schedule of proposed connections, including shut-downs and tie-ins. Include in the submittal the proposed time and date as well as the anticipated duration of the Work. Submit the detailed schedule coordinated with the construction schedule.
1. Provide specific time and date information to the **District's** Representative 48 hours in advance of proposed Work.
- C. Procedures and Operations:
1. The Contractor shall operate existing pumps, valves and gates required for sequencing procedures under the supervision of the **District's** Representative. Do not operate any valve, gate or other item of equipment without the knowledge of the **District's** Representative.
 2. Insofar as possible, equipment shall be tested and in operating condition before final tie-ins are made to connect equipment to the existing facility.
 3. Demonstrate irrigation system operations to proposed design standards including controller operation(where applicable)
 4. Carefully coordinate Work and schedules. Provide written notice to the **District's** Representative at least 48 hours before shutdowns or bypasses are required.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 PREPARATION

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify **District's** Representative seven days prior to startup of each item.
- C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control, sequence, or other damage causing conditions.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify wiring and support components for each equipment are complete and tested.
- F. Execute start-up under supervision in accordance with manufacturer's instructions.
- G. When specified in individual Specification sections, require manufacturer to provide an authorized representative to be present at the site to inspect, check and approve

equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

- H. Submit written report indicating that all equipment or systems have been properly installed and are functioning.

3.02 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Construction Manager two weeks prior to Date of Substantial Completion
- B. Utilize O&M Manuals as the basis for instruction. Review contents of manual with **District's** Representative in detail to explain aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed upon times, at the equipment location.
- D. Prepare and insert additional data in O&M Manuals when the need for additional data becomes apparent during instruction.
- E. At a minimum, Contractor will demonstrate the following.
 - 1. Products and procedures to be used in maintaining landscape irrigation systems.
 - 2. Products and procedures to be used in maintaining parks and recreation equipment and features.
 - 3. Products and procedures to be used in maintaining site electrical systems.

END OF SECTION

Section 01770

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Closeout procedures including final submittals such as operation and maintenance data, warranties, and spare parts and maintenance materials.

1.02 CLOSEOUT PROCEDURES

- A. Comply with Document 00700 - General Conditions regarding Final Completion and Final Payment when Work is complete and ready for District's Representative's final inspection.
- B. Provide Project Record Documents in accordance with Section 01785.
- C. Complete or correct items on punch list, with no new items added. Any new items will be addressed during warranty period.
- D. The District will occupy portions of the Work as specified in other Sections.

1.03 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. For facilities, clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to a sanitary condition.
- D. Clean or replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and temporary construction facilities from the site following the final test of utilities and completion of the work.

1.04 ADJUSTING

- A. Adjust operating equipment to ensure smooth and unhindered operation. The value of this testing and adjusting is 5 percent of the Lump Sum Price in the Schedule of Values for the item being tested.

1.05 OPERATION AND MAINTENANCE DATA

- A. Submit operations and maintenance data as noted in 01330 - Submittal Procedures.
- B. Five percent of the lump sum amount of each piece of equipment as indicated in the Schedule of Unit Price Work or Schedule of Values will be paid after the required O&M data submissions are received and approved by the District's Representative.

1.06 WARRANTIES

- A. Provide one original of each warranty from Subcontractors, suppliers, and manufacturers.
- B. Provide Table of Contents and assemble warranties in 3-ring/D binder with durable plastic cover.
- C. Submit warranties prior to final Application for Payment.
- D. Warranties shall commence in accordance with the requirements in Document 00700 - General Conditions, paragraph 9.10, Substantial Completion.

1.07 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual Specification sections.
- B. Deliver to location within the Work limits as directed by District's Representative; obtain receipt prior to final Application for Payment.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01782

OPERATIONS AND MAINTENANCE DATA

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittal requirements for equipment and facility Operations and Maintenance (O&M) Manuals

1.02 MEASUREMENT AND PAYMENT

- A. No separate payment shall be made for preparation and submittal of operations and maintenance manuals.

1.03 SUBMITTALS

- A. Conform to requirements of Section 01330 - Submittal Procedures. Submit a list of O&M Manuals and parts manuals for equipment to be incorporated into the Work.
- B. Submit documents with 8-1/2 x 11-inch text pages, bound in 3-ring/D binders with durable plastic covers.
- C. Print "OPERATION AND MAINTENANCE INSTRUCTIONS", Project name, and subject matter of binder on covers when multiple binders are required.
- D. Subdivide contents with permanent page dividers, logically organized according to the Table of Contents, with tab titling clearly printed under reinforced laminated plastic tabs.
- E. O&M Manual contents: Prepare a Table of Contents for each volume, with each Product or system description identified.
 - 1. Part 1 - Directory: Listing of names, addresses, and telephone numbers of Design Consultant, Contractor, Subcontractors, and major equipment Suppliers. Specifically list the category of work of each Subcontractor, i.e., ceramic floor tile, carpeting, or resilient flooring, versus only listing it as flooring for each.
 - 2. Part 2 - O&M instructions arranged by system. For each category, identify names, addresses, and telephone numbers of Subcontractors and Suppliers and include the following:
 - a). Significant design criteria.
 - b). List of equipment.

- c). Parts list for each component.
 - d). Operating instructions.
 - e). Maintenance instructions for equipment and systems.
 - f). Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
3. Part 3 - Project documents and certificates including:
- a). Shop Drawings and relevant data.
 - b). Air and water balance reports.
 - c). Certificates.
 - d). Photocopies of warranties.
- F. Submit two copies of O&M Manuals and parts manuals, for review, within one month prior to placing the equipment or facility in service.
- G. Submit one copy of completed volumes in final form 10 days prior to final inspection. One copy with Project Manager comments will be returned after final inspection. Revise content of documents based on Project Manager's comments prior to final submittal.
- H. Revise and resubmit three final volumes within 10 days after final inspection.

1.04 EQUIPMENT O&M DATA

- A. Furnish O&M Manuals, prepared by manufacturers for all equipment. Manuals must contain, as a minimum, the following:
- 1. Equipment functions, normal operating characteristics, and limiting conditions.
 - 2. Assembly, Installation, alignment, adjustment, and checking instructions.
 - 3. Operating instructions for start-up, normal operation, regulation and control, normal shutdown, and emergency shutdown.
 - 4. Detailed drawings showing the location of each maintainable part and lubrication point with detailed instructions on disassembly and reassembly of the equipment.
 - 5. Troubleshooting guide.
 - 6. Spare parts list, predicted life of parts subject to wear, lists of spare parts recommended to be on hand for both initial start-up and for normal operating inventory, and local or nearest source of spare parts availability.
 - 7. Outline, cross-section, and assembly drawings with engineering data and wiring diagrams.
 - 8. Test data and performance curves.
- B. Furnish parts manuals for all equipment, prepared by the equipment manufacturer, which contain, as a minimum, the following:

1. Detailed drawings giving the location of each maintainable part.
2. Spare parts list with predicted life of parts subject to wear, lists of spare parts recommended on hand for both initial start-up and for normal operating inventory, and local or nearest source of spare parts availability.

PART 2 PRODUCTS -Not Used

PART 3 EXECUTION -Not Used

END OF SECTION

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Section 01785

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Maintenance and Submittal of Record Documents and Samples.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Maintain one record copy of documents in accordance with Document 00700 - General Conditions.
- B. Store Record Documents and samples in field office if a field office is required by Contract Documents, or in a secure location. Provide files, racks, and secure storage for Record Documents and samples.
- C. Label each document "PROJECT RECORD" in neat, large, printed letters.
- D. Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes.
- E. Keep Record Documents and Samples available for inspection by District's Representative.

1.03 RECORDING

- A. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- B. Contract Drawings and Shop Drawings: Legibly mark each item to record all actual construction, or "as built" conditions, including:
 - 1. Measured depths of elements of foundation in relation to finish first floor datum.
 - 2. Measured horizontal locations and elevations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Elevations of underground utilities referenced to City of Houston bench mark utilized for project.
 - 4. Measured locations of internal utilities and appurtenances concealed in construction,

referenced to visible and accessible features of construction.

5. Field changes of dimension and detail.
 6. Changes made by modifications.
 7. Details not on original contract drawings.
 8. References to related shop drawings and Modifications.
- C. Record information with a red felt-tip marking pen on a set of blue line opaque drawings, provided by District's Representative.

1.04 SUBMITTALS

- A. At contract closeout, deliver Project Record Documents to District's Representative.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION