

PROJECT MANUAL
FOR
CONSTRUCTION OF

DEER PARK NATURE PRESERVE

CITY COUNCIL APPROVAL SET

DEER PARK, TX

FOR

DEER PARK PARK AND RECREATION DEPARTMENT

DEER PARK, TX

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JANUARY 06, 2017

RVi PROJECT NO. 154382

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01/06/17

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both.
 10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and

Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
25. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.

26. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
27. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
28. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
29. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
30. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
31. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
32. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
33. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
34. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
35. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
36. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
37. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
38. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

39. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
40. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
41. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
42. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
43. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
44. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
45. *Unit Price Work*—Work to be paid for on the basis of unit prices.
46. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
47. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

- B. *Day*:
1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- C. *Defective*:
1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion.
- D. *Furnish, Install, Perform, Provide*:
1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- E. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to the Owner and Engineer:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

2.05 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

2.07 *Designation of Authorized Representatives*

- A. Prior to or within three (3) days of the Notice to Proceed, the Owner and Contractor shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

3.02 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. Should Contractors perform the Work after discovery of such a conflict without reporting the conflict or before receipt of a clarification or interpretation by Engineer, Contractor will be solely liable for any correction or other measures that may be required to overcome the conflict or bring the Work into compliance with the Contract Documents.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

- b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence upon issuance of notice to proceed.

4.02 *Commencement of Performance*

- A. No Work shall be done at the Site prior to such date. Contractor may commence performance upon receipt of the Notice to Proceed and in accordance with any terms and dates contained therein.

4.03 *Reference Points*

- A. If applicable, Owner shall provide engineering surveys, or GPS control points to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.
- B. Contractor shall note the location of all reference points and controls on a set of red-lined drawings or exhibits to be maintained at all time on the jobsite.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Time. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. abnormal weather conditions;
 - 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 - 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.
- H. Contractor expressly waives any right to an adjustment in Contract Price for any event of delay. Contractor's sole remedy for any delay shall be limited to an adjustment in Contract Time.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

- A. *Limitation on Use of Site and Other Areas:*
 - 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 - 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with

such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, INDEMNIFY AND HOLD HARMLESS OWNER, ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, EMPLOYEES, AGENTS, CONSULTANTS AND SUBCONTRACTORS FROM AND AGAINST ANY SUCH CLAIM, AND AGAINST ALL COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO ANY CLAIM OR ACTION, LEGAL OR EQUITABLE, BROUGHT BY ANY SUCH OWNER OR OCCUPANT AGAINST OWNER OR ANY OTHER PARTY INDEMNIFIED HEREUNDER TO THE EXTENT CAUSED DIRECTLY OR INDIRECTLY, IN WHOLE OR IN PART BY, OR BASED UPON, CONTRACTOR'S PERFORMANCE OF THE WORK, OR BECAUSE OF OTHER ACTIONS OR CONDUCT OF THE CONTRACTOR OR THOSE FOR WHICH CONTRACTOR IS RESPONSIBLE.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. Contractor accepts the responsibility to satisfy itself as to the soil conditions and nature and type of geological formations in and through which this Project will be constructed. Such information as may be obtained from the test borings and accompanying notations shown on the plans is merely for the guidance of the Contractor and is not to be construed in any manner as a guarantee by the Owner that such conditions of sub-surface strata are infallible.
- B. Contractor waives any and all rights to make a claim against Owner relating to representations related to geotechnical data provided in the contract documents, plans and specifications. The locations of the test holes, if applicable, are shown in the Geotechnical Report. Logs of these test holes are included in the Geotechnical Report. Test holes information represents subsurface characteristics to the extent indicated and only for the point location of the test hole. Contractor shall make its own interpretation of the character and condition of the materials, which will be encountered. Contractor may, at its own expense, make additional surveys and investigations as it may deem necessary to determine conditions, which will affect performance of the Work.
- C. *Reports and Drawings:* Owner will identify to the Contractor:
 - 1. any reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. any drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 3. Technical Data contained in such reports and drawings.
- D. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified by Owner with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
 2. is of such a nature as to require a change in the Drawings or Specifications; or
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Times to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's time required for performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
 2. Contractor shall not be entitled to any adjustment in the Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor submitted its Bid or entered into the Agreement with Owner for the Project; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Times, then any such adjustment shall be set forth in a Change Order.
 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Contract Documents:
1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Times Adjustments:*
 1. Contractor shall be entitled to an equitable adjustment in the Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

- b. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
- 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Times then any such adjustment shall be set forth in a Change Order.
- 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Times no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- B. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- C. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and deduct all costs incurred from the contract balance or if no contract balance, may file a claim for costs.
- D. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- E. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by

Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- G. TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS OWNER AND ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, EMPLOYEES, AGENTS, AND CONSULTANTS FROM AND AGAINST ALL CLAIMS, COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO THE FAILURE TO CONTROL, CONTAIN, OR REMOVE A CONSTITUENT OF CONCERN BROUGHT TO THE SITE BY CONTRACTOR OR BY ANYONE FOR WHOM CONTRACTOR IS RESPONSIBLE, OR TO A HAZARDOUS ENVIRONMENTAL CONDITION CREATED BY CONTRACTOR OR BY ANYONE FOR WHOM CONTRACTOR IS RESPONSIBLE.
- H. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond in accordance with chapter 2253 of the Texas Government Code. Contractor shall also furnish such other bonds as are required by other specific provisions of the Contract.
- B. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds in a form acceptable to Owner. The surety on the bonds must be duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in Texas, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide bonds from another surety, all of which shall comply with the requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

6.02 *Insurance—General Provisions*

- A. Owner is self-insured as a municipality of the State of Texas.
- B. Contractor shall provide all insurance with required by Exhibit A to these General Conditions, Owner's Insurance Requirements.

ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written consent of Owner. Such consent shall not be unreasonably withheld.

7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner’s written consent, which will not be unreasonably withheld.
- C. Contractor shall provide and pay for labor in accordance with the prevailing wage in the locality and shall not pay less than the prevailing wage.

7.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *“Or Equals”*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is

followed by words reading that no like, equivalent, or “or equal” item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an “or equal” item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor’s Expense:* Contractor shall provide all data in support of any proposed “or equal” item at Contractor’s expense.
- C. *Engineer’s Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each “or-equal” request. Engineer may require Contractor to furnish additional data about the proposed “or-equal” item. Engineer will be the sole judge of acceptability. No “or-equal” item will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an “or-equal”, which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination. Use of an unapproved “or-equal” item will render such Work defective and will be subject to Article 14 provisions.
- D. *Effect of Engineer’s Determination:* Neither approval nor denial of an “or-equal” request shall result in any change in Contract Price. The Engineer’s denial of an “or-equal” request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished,

installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- E. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- B. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- C. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- D. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- E. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- F. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- G. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- H. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner.
- I. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

7.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. TO THE FULLEST EXTENT PERMITTED BY LAWS AND REGULATIONS, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS OWNER, ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, EMPLOYEES, AGENTS, AND CONSULTANTS OF EACH AND ANY OF THEM FROM AND AGAINST ALL CLAIMS, COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO ANY INFRINGEMENT OF PATENT RIGHTS OR COPYRIGHTS INCIDENT TO THE USE IN THE PERFORMANCE OF THE WORK OR RESULTING FROM THE INCORPORATION IN THE WORK OF ANY INVENTION, DESIGN, PROCESS, PRODUCT, OR DEVICE NOT SPECIFIED IN THE CONTRACT DOCUMENTS.

7.08 *Permits*

- A. The Owner shall waive all construction permit fees and charges assessed by entities and agencies of the City. This section is not intended to waive any permit fees or charges assessed by the departments of the state, the county or federal government. To the extent such fees are not waived, Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract).

7.09 *Taxes*

- A. The Owner enjoys tax-exempt status as a municipality. To enjoy the cost-savings benefits of its tax-exempt status, the Owner will provide a Tax Exemption Certificate to the Contractor for use on the Project. The Contractor shall use that certificate to exempt any purchases made for the Work from taxes. All savings for the tax-exempt status will be passed on to the Owner by the Contractor. The Contractor agrees to bind all Subcontractors of any tier to the obligation to present and use the Tax Exemption Certificate and pass all savings to the Owner.

7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses. However, Contractor has no responsibility or liability for determining whether the Work as described in the Contract Documents complies with applicable Laws or Regulations.

7.11 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Owner. Delivery of a complete set of record documents to Owner is a condition precedent to Final Completion.

7.12 *Safety and Protection*

- A. Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall comply with all Laws and Regulations regarding safety and shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

- G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.
- B. In the event there is an accident involving injury to any individual on or near the Work, the Contractor shall notify Owner's Representative within twenty-four (24) hours of the event and shall be responsible for recording the location of the event and the circumstances surrounding the event through photographs, interviewing witnesses, obtaining medical reports and other documentation that describes the event. Copies of such documentation shall be provided to Owner, for the Owner's and Engineer's records, within forty-eight (48) hours of the event. Nothing in this section will relieve Contractor of its obligations and responsibilities with respect to an injury under any state and federal laws and regulations.

7.16 *Shop Drawings, Samples, and Other Submittals*

- A. *Shop Drawing and Sample Submittal Requirements:*
 - 1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.
1. *Shop Drawings:*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.
 2. *Samples:*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or

Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

3. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
4. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.
5. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

- B. The Contractor warrants and guarantees for one (1) year from Final Completion, or for a longer period if expressly stated in the Contract Documents, the Work. This includes a Warranty and Guarantee against any and all defects. The Contractor must correct any and all defects in material and/or workmanship which may appear during the Warranty and Guarantee period, or any defects that occur within one (1) year of Final Completion even if discovered more than one (1) year after Final Completion, by repairing (or replacing with new items or new materials, if necessary) any such defect at no cost to the Owner, within a reasonable period of time, and to the Owner's satisfaction.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 - 1. observations by Engineer;
 - 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. use or occupancy of the Work or any part thereof by Owner;
 - 5. any review and approval of a Shop Drawing or Sample submittal;
 - 6. the issuance of a notice of acceptability by Engineer;
 - 7. any inspection, test, or approval by others; or
 - 8. any correction of defective Work by Owner.

7.18 *Indemnification*

- A. TO THE FULLEST EXTENT PERMITTED BY LAW, AND IN ADDITION TO ANY OTHER OBLIGATIONS OF CONTRACTOR UNDER THE CONTRACT OR OTHERWISE, CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS OWNER, ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, EMPLOYEES, AGENTS, AND CONSULTANTS FROM AND AGAINST ALL CLAIMS, COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO THE PERFORMANCE OF THE WORK, PROVIDED THAT ANY SUCH CLAIM, COST, LOSS, OR DAMAGE IS ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE, OR DEATH, OR TO INJURY TO OR DESTRUCTION OF TANGIBLE PROPERTY (OTHER THAN THE WORK ITSELF), INCLUDING THE LOSS OF USE RESULTING THEREFROM BUT ONLY TO THE EXTENT CAUSED BY ANY NEGLIGENT ACT OR OMISSION OF CONTRACTOR, ANY SUBCONTRACTOR, ANY SUPPLIER, OR ANY INDIVIDUAL OR ENTITY DIRECTLY OR INDIRECTLY EMPLOYED BY ANY OF THEM TO PERFORM ANY OF THE WORK OR ANYONE FOR WHOSE ACTS ANY OF THEM MAY BE LIABLE.

7.19 *Delegation of Professional Design Services*

- A. Contractor shall not be responsible for nor warrant the adequacy of the design, performance, criteria, or design criteria specified by Owner or Engineer in the Contract Documents, Plans , and Specifications.
- B. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- C. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- D. Owner shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- E. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly

integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at

or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) INDEMNIFY AND HOLD HARMLESS OWNER, ITS OFFICERS, DIRECTORS, MEMBERS, PARTNERS, EMPLOYEES, AGENTS, AND CONSULTANTS FROM AND AGAINST ANY SUCH CLAIMS, AND AGAINST ALL COSTS, LOSSES, AND DAMAGES (INCLUDING BUT NOT LIMITED TO ALL FEES AND CHARGES OF ENGINEERS, ARCHITECTS, ATTORNEYS, AND OTHER PROFESSIONALS AND ALL COURT OR ARBITRATION OR OTHER DISPUTE RESOLUTION COSTS) ARISING OUT OF OR RELATING TO SUCH DAMAGE, DELAY, DISRUPTION, OR INTERFERENCE.

ARTICLE 9 – OWNER’S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. For all Project and performance of Work matters, Owner will issue communications to Contractor through Engineer. However, Owner may, at its discretion, issue communications related to the Project directly to Contractor. In all such direct communications, Owner will endeavor to copy Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer. The replacement engineer’s status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner’s duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner’s duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

9.06 *Limitations on Owner’s Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor’s failure to perform the Work in accordance with the Contract Documents.

9.07 *Evidence of Financial Arrangements*

- A. Within Thirty (30) days of executing the Agreement, Contractor may request, and Owner shall furnish, reasonable evidence that financial arrangements have been made to satisfy Owner’s obligations under the Contract Documents.

9.08 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will act as the Owner's representative for Project administration during the construction period. Engineer shall not have the authority to bind the Owner as that authority lies with the Owner's designated representative, but Engineer may communicate on behalf of Owner in all Project matters.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in this article 10.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Engineer's authority, responsibility and actions as Owner's representative shall not give rise to any liability to Contractor. Contractor expressly waives any claims it has against Engineer for the performance of its responsibilities as Owner's representative.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto.
- C. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- D. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. A Change Order shall be used to amend or supplement the Contract Documents when the Parties agree to the amendment, supplement, modification to the scope of work, or change in the Contract Price or the Contract Times.
 - 2. *Work Change Directives:* A Work Change Directive may be issued by the Owner if the Parties cannot agree on a Change Order or if:
 - a. The parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order,

following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price.

- b. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.
 - c. Upon receipt of a Change Directive, Contractor shall promptly proceed with the change in the Work involved.
3. *Field Orders:* Owner or Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

- B. An adjustment in the Contract Price will be determined as follows:
1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).
- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any

Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
 - 1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 - 2. *Engineer's Action:* Engineer will review each Change Proposal with Owner and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Engineer's action on a Change Proposal will not have the effect of adjusting the Contract Time or Contract Price without express written approval of Owner and a memorialization of Engineer's Action in a Change Order. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 - 3. *Binding Decision:* Engineer's decision will be final and binding upon Contractor, unless Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07; and
4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The responsibility to substantiate a Claim shall rest with the party making the Claim.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 2. If Owner and Contractor agree to mediation, the mediation shall occur within 60 days of the agreement to mediate. However, the mediation may be stayed and its scope and schedule may be amended, provided that the mediation occur no later than 60 days following Final Completion.
 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

4. Mediation is a condition precedent to litigation before a court of competent jurisdiction or tribunal.
- E. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party.
- F. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise, that agreement should be memorialized in a Change Order if the Project is ongoing at the time of resolution and the agreement affects the Contract scope, price, or time.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

- C. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
1. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, approved by Owner, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. The cost of utilities, fuel, and sanitary facilities at the Site.
 - e. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- D. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:
1. Payroll costs and other compensation of Contractor's employees, agents and other personnel not included in Paragraph 13.01.B, whether at the Site or in Contractor's principal or branch office for general administration of the Work. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 4. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- E. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.
- F. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a

decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall be responsible for providing the services of an independent inspection and testing lab if the Contract Documents and Specifications so require.
- C. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner.

- D. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.

- B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages*: Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, upon Owner's approval and Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer

for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents; and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. Reductions in Payment by Owner:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - h. there are other items entitling Owner to a set off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. At that inspection, Owner and Engineer will review, supplement, and edit the initial punch list prepared by Contractor or prepare an additional punch list if Contractor has not yet provided a punch list. If Owner or Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Owner and Engineer consider the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. If Owner and Engineer do not consider the Work substantially complete, the Engineer shall notify Contractor of such, in writing, with a specific explanation of those portions of the Work that are the basis for determining the Work is not substantially complete.
- D. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03 for that part of the Work.
 - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of

completion. If Owner or Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Owner or Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work.

4. No use or occupancy or separate operation of part of the Work by Owner will relieve Contractor of its insurance obligations under these Contract Documents.
- B. The Owner, at the Owner's sole option, shall have the right to take possession of and use any completed or partially completed portion of the Work regardless of the time for completing the entire Work. The Owner's exercise of such use and possession shall not be construed to mean that the Owner acknowledges that any part of the Work so possessed and used is substantially complete or that it is accepted by Owner, and the Owner's exercise of such use and possession shall not relieve the Contractor of its responsibility to complete all Work in accordance with the Contract Documents.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other

burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off) will become due and shall be paid by Owner to Contractor.

E. *Contractor's Warranty and Guarantee:* Contractor's general warranty period and guarantee will begin to run upon Final Completion as approved by City Council, and following Engineer's written recommendation.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from defective Work appearing after final inspection, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted, expressly reserved, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Final Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is in need of repair, adjustment, modification, correction, or found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as

permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
 2. correct such defective Work;
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents; or
 3. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
1. declare Contractor to be in default, and give Contractor notice that the Contract is terminated; and
 2. enforce the rights available to Owner under any applicable performance bond.
- C. If Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient. If Owner chooses to complete the Work in accordance with this provision, Owner and Contractor expressly agree that Owner shall be exempt from publicly bidding the completion work pursuant to Section 252.022 of the Texas Local Government Code.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds to complete the Work and/or correct the default, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety.

16.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for:
1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination;
 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work;
 3. demobilization expenses; and
 4. overhead and profit on unperformed work. .
- B. Contractor shall not be paid for any economic loss arising out of or resulting from such termination, except for those costs expressly identified above..

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 180 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
 - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
 - 3. Reserved claims of Owner or Contractor under these Control Documents, including Article 12.
- B. *Final Resolution of Disputes:*
 - 1. For any disputes subject to this article, Owner and Contractor shall endeavor to resolve their Claims by mediation. The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction. Mediation is a condition precedent to litigation before a court of competent jurisdiction.
 - 2. For any claim not resolved by mediation, the parties agree to submit such claims to the jurisdiction of the District Court of Harris County, Texas for final dispute resolution.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended;
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice; or
 - 3. delivered by electronic means with a corresponding confirmation of delivery or read receipt.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday, Sunday or a legal holiday, the computation of time will conclude on the next business day.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available, by special warranty or guarantee, or by other provisions of the Contract.

18.04 *Limitation of Damages*

- A. The Contractor and Owner waive claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:
 - 1. damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
 - 2. damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, bonding capacity, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state of Texas.

18.08 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

18.09 *Prevailing Wage*

- A. Contractor shall provide and pay for labor in accordance with the prevailing wage in the locality and shall not pay less than the prevailing wage.

18.10 *Right to Audit:*

- A. Whenever the Owner enters into any type of contractual arrangement with the Contractor, then the Contractor's "records" shall upon reasonable notice be open to inspection and subject to audit and/or reproduction during normal business working hours. The Owner's representative, or an outside representative engaged by the Owner, may perform such audits. The Contractor shall maintain all records relating to this Agreement for four (4) years from the date of final payment under this Agreement.
- B. The Owner shall have the exclusive right to examine the records of the Contractor. The term "records" as referred to herein shall include any and all information, materials and data of every kind and character, including without limitation records, books, papers, documents, contracts, schedules, commitments, arrangements, notes, daily diaries, reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may, in the Owner's judgment, have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any contract document. Such records shall include (hard copy, as well as computer-readable data if it can be made available), written policies and procedures, time sheets, payroll registers, cancelled checks, personnel file data, correspondence, general ledger entries, and any other record in the Contractor's possession which may have a bearing on matters of interest to the Owner in connection with the Contractor's dealings with the Owner (all of the foregoing are hereinafter referred to as "records"). In addition, the Contractor shall permit interviews of employees as well as agents, representatives, vendors, subcontractors and other third parties paid by the Contractor to the extent necessary to adequately permit evaluation and verification of the following:
 - 1. The Contractor's compliance with contract requirements;
 - 2. The Contractor's compliance with the Owner's business ethics policies; and
 - 3. If necessary, the extent of the Work performed by the Contractor at the time of contract termination.
- C. The Contractor shall require all payees (examples of payees include subcontractors, insurance agents, material suppliers, etc.) to comply with the provisions of this Article 18.01 by securing the requirements hereof in a written agreement between the Contractor and payee. Such requirements include a flow-down right of audit provision in contracts with payees that also apply to subcontractors and sub-subcontractors, material suppliers, etc. The Contractor shall cooperate fully and shall require Related Parties and all of the Contractor's subcontractors to cooperate fully in furnishing or in making available to the Owner from time to time whenever requested, in an expeditious manner, any and all such information, materials, and data.

- D. The Owner's authorized representative or designee shall have reasonable access to the Contractor's facilities, shall be allowed to interview all current or former employees to discuss matters pertinent to the performance of this Agreement, and shall be provided adequate and appropriate work space in order to conduct audits in compliance with this Article 18.10.

- E. If an audit inspection or examination in accordance with this Article 18.10 discloses overpricing or overcharges of any nature by the Contractor to the Owner in excess of one-half of one percent (.5%) of the total contract billings, then the reasonable actual cost of the Owner's audit shall be reimbursed to the Owner by the Contractor. Any adjustments and/or payments, which must be made as a result of any such audit or inspection of the Contractor's invoices and/or records, shall be made within a reasonable amount of time (not to exceed 90 days) from presentation of the Owner's findings to the Contractor.

Exhibit A.
Owner's Insurance Requirements of Contractor

1. Specific Insurance Requirements

The following insurance shall be maintained in effect with limits not less than those set forth below at all times during the term of this Agreement and thereafter as required:

Insurance	Coverage/Limits	Other Requirements
Commercial General Liability (Occurrence Basis)	Amounts of coverage shall be no less than: ▪ \$1,000,000 Per Occurrence ▪ \$2,000,000 General Aggregate ▪ \$2,000,000 Products/Completed Operations Aggregate ▪ \$1,000,000 Personal And Advertising Injury ▪ Designated Construction Project(s) General Aggregate Limit	▪ Current ISO edition of CG 00 01 ▪ Additional insured status shall be provided in favor of Owner Parties on a combination of ISO forms CG 20 10 04 13 and CG 20 37 04 13. ▪ This coverage shall be endorsed to provide primary and non-contributing liability coverage. It is the intent of the parties to this Agreement that all insurance coverage required herein shall be primary to and will not seek contribution from any other insurance held by Owner Parties, with Owner Parties' insurance being excess, secondary and non-contributing. ▪ Stop Gap coverage shall be provided if any work is to be performed in a monopolistic workers' compensation state. ▪ The following exclusions/limitations (or their equivalent(s), are prohibited: ○ Contractual Liability Limitation CG 21 39 ○ Amendment of Insured Contract Definition CG 24 26 ○ Limitation of Coverage to Designated Premises or Project, CG 21 44 ○ Exclusion-Damage to Work Performed by Subcontractors On Your Behalf, CG 22 94 or CG 22 95 ○ Exclusion-Explosion, Collapse and Underground Property Damage Hazard, CG 21 42 or CG 21 43 ○ Any Classification limitation ○ Any Construction Defect Completed Operations exclusion ○ Any endorsement modifying the Employer's Liability exclusion or deleting the exception to it ○ Any endorsement modifying or deleting Explosion, Collapse or Underground coverage ○ Any Habitational or Residential exclusion applicable to the Work ○ Any "Insured vs. Insured" exclusion except Named Insured vs. Named Insured ○ Any Punitive, Exemplary or Multiplied Damages exclusion ○ Any Subsidence exclusion

Business Auto Liability	Amount of coverage shall be no less than: ▪ \$1,000,000 Per Accident	▪ Current ISO edition of CA 00 01 ▪ Arising out of any auto (Symbol 1), including owned, hired and nonowned
Workers' Compensation and Employer's Liability	Amounts of coverage shall be no less than: ▪ Statutory Limits ▪ \$1,000,000 Each Accident and Disease ▪ Alternate Employer endorsement ▪ USL&H must be provided where such exposure exists.	▪ The State in which work is to be performed must listed under Item 3.A. on the Information Page ▪ Such insurance shall cover liability arising out of the Contractor's employment of workers and anyone for whom the Contractor may be liable for workers' compensation claims. Workers' compensation insurance is required, and no "alternative" forms of insurance shall be permitted. ▪ Where a Professional Employer Organization (PEO) or "leased employees" are utilized, Contractor shall require its leasing company to provide Workers' Compensation insurance for said workers and such policy shall be endorsed to provide an Alternate Employer endorsement in favor of Contractor and Owner. Where Contractor uses leased employees with Workers' Compensation insurance provided by a PEO or employee leasing company, Contractor is strictly prohibited from subletting any of its work without the express written agreement of Owner.
Excess Liability (Occurrence Basis)	Amounts of coverage shall be no less than: ▪ \$5,000,000 Each Occurrence ▪ \$5,000,000 Annual Aggregate	▪ Such insurance shall be excess over and be no less broad than all coverages described above. ▪ Drop-down coverage shall be provided for reduction and/or exhaustion of underlying aggregate limits and shall include a duty to defend any insured.
Professional Liability	Amounts of coverage shall be no less than: ▪ \$1,000,000 Each Occurrence ▪ \$2,000,000 Annual Aggregate ▪ If a combined Contractor's Pollution Liability and Professional Liability policy is utilized, the limits shall be \$3,000,000 Each Loss and Aggregate. ▪ Such insurance shall cover all services rendered by the Contractor and its consultants under the Agreement, including but not limited to design or design/build services. ▪ Policies written on a Claims-Made basis shall be maintained for at least two years beyond termination of the Agreement.	▪ Such insurance shall cover all services rendered by the Contractor and its subcontractors under the Agreement. ▪ This insurance is not permitted to include any type of exclusion or limitation of coverage applicable to claims arising from: ○ bodily injury or property damage where coverage is provided in behalf of design professionals or design/build contractors ○ habitational or residential operations ○ mold and/or microbial matter and/or fungus and/or biological substance ○ punitive, exemplary or multiplied damages. ▪ Any retroactive date must be effective prior to beginning of services for the Owner. ▪ Policies written on a Claims-Made basis shall have an extended reporting period of at least two years beyond termination of the Agreement. Vendor shall trigger the extended reporting period if identical coverage is not otherwise maintained with the expiring retroactive date.

Contractors Pollution Liability	Amounts of coverage shall be no less than: ▪ \$1,000,000 Each Loss ▪ \$2,000,000 Annual Aggregate ▪ If a combined Contractor's Pollution Liability and Professional Liability policy is utilized, the limits shall be \$3,000,000 Each Loss and Aggregate. ▪ The policy must provide coverage for: ○ the full scope of the named insured's operations (on-going and completed) as described within the scope of work for this Agreement ○ loss arising from pollutants including but not limited to fungus, bacteria, biological substances, mold, microbial matter, asbestos, lead, silica and contaminated drywall ○ third party liability for bodily injury, property damage, clean up expenses, and defense arising from the operations; ○ diminution of value and Natural Resources damages ○ contractual liability ○ claims arising from non-owned disposal sites utilized in the performance of this Agreement.	▪ The policy must insure contractual liability, name Owner Parties as an Additional Insured, and be primary and noncontributory to all coverage available to the Additional Insured. ▪ This insurance is not permitted to include any type of exclusion or limitation of coverage applicable to claims arising from: ○ Insured vs. insured actions. However exclusion for claims made between insured within the same economic family are acceptable. ○ impaired property that has not been physically injured ○ materials supplied or handled by the named insured. However, exclusions for the sale and manufacture of products are allowed. Exclusionary language pertaining to materials supplied by the insured shall be reviewed by the certificate holder for approval. ○ property damage to the work performed by the contractor ○ faulty workmanship as it relates to clean up costs ○ punitive, exemplary or multiplied damages ○ work performed by subcontractors ▪ If coverage is provided on a Claims Made basis, coverage will at least be retroactive to the earlier of the date of this Agreement or the commencement of contractor services relation to the Work. ▪ The policy will offer an extended discovery or extended reporting clause of at least three (3) years. ▪ Completed Operations coverage shall be maintained through the purchase of renewal policies to protect the insured and additional insured for at least two (2) years after the property owner accepts the project or this contract is terminated. The purchase of an extended discovery period or an extended reporting period on a Claims Made policy or the purchase of occurrence based Contractors Environmental Insurance will not be sufficient to meet the terms of this provision.
Builders Risk	▪ Coverage shall be provided in an amount equal at all times to the full contract value, including change orders, and cost of debris removal for any single occurrence. ▪ Coverage shall be at least as broad as an unmodified ISO Special form, shall be provided on a completed-value basis, and shall be primary to any other insurance coverage available to the named insured parties, with that other insurance being excess, secondary and non-contributing. ▪ The policy must provide coverage for:	▪ Insureds shall include Owner, General Contractor, all Loss Payees and Mortgagees, and subcontractors of all tiers in the Work as Insureds. ▪ Such insurance shall cover: ○ all structure(s) under construction, including retaining walls, paved surfaces and roadways, bridges, glass, foundation(s), footings, underground pipes and wiring, excavations, grading, backfilling or filling; ○ all temporary structures (e.g., fencing, scaffolding, cribbing, false work, forms, site lighting, temporary utilities and buildings)

	○ Agreed Value Included ○ Damage arising from error, omission or deficiency in construction methods, design, specifications, workmanship or materials, including collapse Included ○ Debris removal additional limit \$1,000,000 ○ Earthquake and Earthquake Sprinkler Leakage \$5,000,000 ○ Flood \$5,000,000 ○ Freezing Included ○ Mechanical breakdown including hot & cold testing Included ○ Ordinance or law \$1,000,000 ○ Pollutant clean-up and removal \$ 25,000 ○ Preservation of property Included ○ Theft Included ● Deductible shall not exceed ○ All Risks of Direct Damage, Per Occurrence, except \$10,000 ○ Named Storm 2% subject to \$50,000 minimum ○ Earthquake and Earthquake Sprinkler Leakage, Per Occurrence \$100,000 ○ Flood, Per Occurrence or excess of NFIP if in Flood Zone A or V \$100,000	- located at the site; ○ all property including materials and supplies on site for installation; ○ all property including materials and supplies at other locations but intended for use at the site; ○ all property including materials and supplies in transit to the site for installation by all means of transportation other than ocean transit; and ○ other Work at the site identified in the Agreement to which this Exhibit is attached. ● No protective safeguard warranty shall be permitted. ● The termination of coverage provision shall be endorsed to permit occupancy of the covered property being constructed. This insurance shall be maintained in effect, unless otherwise provided for the Agreement Documents, until the earliest of: ○ the date on which all persons and organizations who are insureds under the policy agree that it shall be terminated; ○ occupancy, in whole or in part; ○ the date on which release of substantial completion is executed; or ○ the date on which the insurable interests of Contractor in the Covered Property has ceased. ● A waiver of subrogation provision shall be provided in favor of all insureds.
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2. General Insurance Requirements

A. Definitions. For purposes of this Agreement:

- i. "ISO" means Insurance Services Office.
- ii. "Contractor" shall include subcontractors of any tier.
- iii. "Owner Parties" means (a) the City of Deer Park ("Owner"), (b) the Project, (c) any lender whose loan is secured by a lien against the Work, (d) their respective shareholders, members, partners, joint venturers, affiliates, subsidiaries, successors and assigns, (e) any directors, officers, employees, or agents of such persons or entities, and (f) others as required by the Construction Documents.

B. Policies.

- i. Contractor shall maintain such General Liability, Excess Liability, Professional and Pollution insurance in identical coverage, form and amount, including required endorsements, for at least two (2) years following Date of Substantial Completion of the Work to be performed under this Agreement. Contractor shall provide written representation to Owner stating Work completion date.
- ii. All policies must:
 - a. Be written through insurance companies authorized to do business in the State in which the work is to be performed and rated no less than A-: VII in the most current edition of A. M. Best's Key Rating Guide at all times Work is to be performed.

- b. Provide a waiver of subrogation in favor of Owner Parties on all insurance coverage carried by Contractor, whether required herein or not.
- c. Contain an endorsement providing for thirty (30) days prior written notice of cancellation to Owner.
- d. Be provided to the Owner Parties in compliance with the requirements herein and shall contain no endorsements that restrict, limit, or exclude coverage required herein in any manner without the prior express written approval of the Owner.
- iii. Failure of any Owner Party to demand such certificate or other evidence of full compliance with these insurance requirements or failure of any Owner Party to identify a deficiency from evidence that is provided shall not be construed as a waiver of the Contractor's obligation to maintain such insurance.
- iv. Contractor shall provide to the Owner a certified copy of all insurance policies required herein within ten (10) days of any such request. Renewal policies, if necessary, shall be delivered to the Owner prior to the expiration of the previous policy.
- v. Commencement of Work without provision of the required certificate of insurance, evidence of insurance and/or required endorsements, or without compliance with any other provision of this Agreement, shall not constitute a waiver by any Owner Party of any rights. The Owner shall have the right, but not the obligation, of prohibiting the Contractor or any subcontractor from performing any Work until such certificate of insurance, evidence of insurance and/or required endorsements are received and approved by the Owner.

C. Limits, Deductibles and Retentions

- i. The limits of liability may be provided by a single policy of insurance or by a combination of primary and excess policies, but in no event shall the total limits of liability available for any one occurrence or accident be less than the amount required herein.
- ii. No deductible or self-insured retention shall exceed \$25,000 without prior written approval of the Owner, except as otherwise specified herein. All deductibles and/or retentions shall be paid by, assumed by, for the account of, and at the Contractor's sole risk. The Contractor shall not be reimbursed for same

D. Forms

- i. If the forms of policies, endorsements, certificates or evidence of insurance required by this Exhibit are superseded or discontinued, Owner will have the right to require other equivalent forms.
- ii. Any policy or endorsement form other than a form specified in this Exhibit must be approved in advance by Owner.

E. Evidence of Insurance. Insurance must be evidenced as follows:

- i. ACORD Form 25 Certificate of Liability Insurance for liability coverages.
- ii. ACORD Form 28 Evidence of Commercial Property Insurance for property coverages.
- iii. Evidence shall be provided to Owner prior to commencing Work and prior to the expiration of any required coverage.
- iv. ACORD Forms specify:
 - a. Owner as certificate holder at Owner's mailing address;
 - b. Insured's name, which must match that on this Agreement;
 - c. Insurance companies producing each coverage and the policy number and policy date of each coverage;
 - d. Producer of the certificate with correct address and phone number and have the signature of the authorized representative of the producer;
 - e. Additional Insured status in favor of Owner Parties;
 - f. Amount of any deductible or self-insured retention in excess of \$25,000;
 - g. Designated Construction Project(s) General Aggregate Limit;
 - h. Primary and non-contributory status;
 - i. Waivers of subrogation; and
 - j. All exclusions and limitations added by endorsement to the General Liability coverage. This can be achieved by attachment of the Schedule of Forms and Endorsements page.
- v. Copies of the following shall also be provided:
 - a. General Liability Additional insured endorsement(s);
 - b. General Liability Schedule of Forms and Endorsements page(s); and
 - c. 30 Day Notice of Cancellation endorsement applicable to all required policies.

F. Contractor Insurance Representations to Owner Parties

- i. It is expressly understood and agreed that the insurance coverages required herein (a) represent Owner Parties' minimum requirements and are not to be construed to void or limit the Contractor's indemnity obligations as contained in this Agreement nor represent in any manner a determination of the insurance coverages the Contractor should or should not maintain for its own protection; and (b) are being, or have been, obtained by the Contractor in support of the Contractor's liability and indemnity obligations under this Agreement. Irrespective of the requirements as to insurance to be carried as provided for herein, the insolvency, bankruptcy or failure of any insurance company carrying insurance of the Contractor, or the failure of any insurance company to pay claims accruing, shall not be held to affect, negate or waive any of the provisions of this Agreement.
- ii. Failure to obtain and maintain the required insurance shall constitute a material breach of, and default under, this Agreement. If the Contractor shall fail to remedy such breach within five (5) business days after notice by the Owner, the Contractor will be liable for any and all costs, liabilities, damages and penalties resulting to the Owner Parties from such breach, unless a written waiver of the specific insurance requirement(s) is provided to the Contractor by the Owner. In the event of any failure by the Contractor to comply with the provisions of this Agreement, the Owner may, without in any way compromising or waiving any right or remedy at law or in equity, on notice to the Contractor, purchase such insurance, at the Contractor's expense, provided that the Owner shall have no obligation to do so and if the Owner shall do so, the Contractor shall not be relieved of or excused from the obligation to obtain and maintain such insurance amounts and coverages.
- iii. This Exhibit is an independent contract provision and shall survive the termination or expiration of the Construction Agreement.

G. Insurance Requirements of Contractor's Subcontractors

- i. Insurance similar to that required of the Contractor shall be provided by all subcontractors (or provided by the Contractor on behalf of subcontractors) to cover operations performed under any subcontract agreement. The Contractor shall be held responsible for any modification in these insurance requirements as they apply to subcontractors. The Contractor shall maintain certificates of insurance from all subcontractors containing provisions similar to those listed herein (modified to recognize that the certificate is from subcontractor) enumerating, among other things, the waivers of subrogation, additional insured status, and primary liability as required herein, and make them available to the Owner upon request.
- ii. The Contractor is fully responsible for loss and damage to its property on the site, including tools and equipment, and shall take necessary precautions to prevent damage to or vandalism, theft, burglary, pilferage and unexplained disappearance of property. Any insurance covering the Contractor's or its subcontractor's property shall be the Contractor's and its subcontractor's sole and complete means or recovery for any such loss. To the extent any loss is not covered by said insurance or subject to any deductible or co-insurance, the Contractor shall not be reimbursed for same. Should the Contractor or its subcontractors choose to self insure this risk, it is expressly agreed that the Contractor hereby waives, and shall cause its subcontractors to waive, any claim for damage or loss to said property in favor of the Owner Parties.

H. Use of the Owners Equipment

The Contractor, its agents, employees, subcontractors or suppliers shall use the Owners equipment only with express written permission of the Owners designated representative and in accordance with the Owners terms and condition for such use. If the Contractor or any of its agents, employees, subcontractors or suppliers utilize any of the Owners equipment for any purpose, including machinery, tools, scaffolding, hoists, lifts or similar items owned, leased or under the control of the Owner, the Contractor shall defend, indemnify and be liable to the Owner Parties for any and all loss or damage which may arise from such use.

I. Release and Waiver

The Contractor hereby releases, and shall cause its subcontractors to release, the Owner Parties from any and all claims or causes of action whatsoever which the Contractor and/or its subcontractors might otherwise now or hereafter possess resulting in or from or in any way connected with any loss covered by insurance, whether required herein or not, or which should have been covered by insurance required herein, including the deductible and/or uninsured portion thereof,

maintained and/or required to be maintained by the Contractor and/or its subcontractors pursuant to this Agreement. **THE FOREGOING RELEASE AND WAIVER APPLY EVEN IF THE LOSS OR DAMAGE IS CAUSED IN WHOLE OR IN PART BY THE FAULT OR NEGLIGENCE OR STRICT LIABILITY OF THE OWNER PARTIES.**

STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR

This Agreement is made and entered into as of the ____ day of _____, 2016 by and between the:

“OWNER”

The City of Deer Park
710 E. San Augustine
Deer Park, Texas 77536
281.479.2394 t
281.478.7217 f

and

“CONTRACTOR”

[name of Contractor]
[address]
[phone and fax numbers]

for the following Project:

Deer Park Nature Preserve

The **ENGINEER** for the Project is
RVi Planning + Landscape Architecture
19 Briar Hollow Lane
Suite #145
Houston, Texas 77027
(713) 621-8025

1.0 THE WORK OF THIS CONTRACT

Unless otherwise provided in these Contract Documents, the CONTRACTOR shall be responsible for performing or causing to be performed all Work including labor and materials, necessary to build, construct, erect and equip in accordance with the Contract Documents and at its own proper cost and expenses to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said construction, in accordance with the conditions and prices stated in the Proposal attached hereto.

The Contract Documents for this Project include this Standard Form of Agreement and the following documents, if applicable:

- Addenda issued by ENGINEER
- General Conditions
- Performance and Payment Bonds
- Request For Proposal and Contract Forms
- Bid Forms
- Technical Specifications
- Drawings

2.0 CONTRACT TIME AND COMPLETION

§ 2.1 The date of commencement of the Work shall be stated in a Notice to Proceed issued by the OWNER.

§ 2.2 Contract Time

§2.2.1 The Contract Time shall be measured from the date of commencement.

§2.2.2 Time is of the essence in all phases of the Work. Additionally, time limits and periods of time stated in the Contract Documents are of the essence. It is specifically understood and agreed to by and between OWNER and CONTRACTOR that time is of the essence in the Final Completion of the Work, and that failure to finally complete the Work within the designated period, or as it may be extended, shall be construed as a breach of this Agreement.

§ 2.3 Final Completion

The CONTRACTOR shall achieve Final Completion of the entire Work not later than 120 calendar days from the date of commencement, subject to and adjustments of this Contract Time as provided in the Contract Documents and Changer Orders modifying and extending this Agreement.

§ 2.4 Liquidated Damages

The CONTRACTOR acknowledges and recognizes that the OWNER is entitled to full and beneficial occupancy and use of the completed work following expiration of the Contract Time. The CONTRACTOR further acknowledges and agrees that, if the CONTRACTOR fails to achieve the Final Completion of any portion of the Work within the Contract time, the OWNER will sustain actual damages as a result of such failure. The exact amount of such damages will be difficult to ascertain. Therefore, the OWNER and CONTRACTOR agree that, if the CONTRACTOR shall neglect, fail, or refuse to achieve Final Completion of the Work by the Final Completion date, subject to proper extension granted by the OWNER, then the CONTRACTOR agrees to pay the OWNER the sum of

Five Hundred Dollars (\$500.00)

for each day in which such Work is not completed, not as penalty, but as liquidated damages, for the damages ("Liquidated Damages") that would be suffered by OWNER as a result of delay for each and every calendar day that the CONTRACTOR shall have failed to have completed the Work as required herein. The Liquidated Damages shall be in lieu of any and all other damages which may be incurred by OWNER as a result of the failure of CONTRACTOR to complete within the Contract Time.

§ 2.5 FINAL COMPLETION

§ 2.5.1 Timely Final Completion is an essential condition of this contract. CONTRACTOR agrees to achieve Final Completion by the designated or extended Final Completion date. The date of Final Completion shall be fixed by this Agreement, unless modified by Change Order, and memorialized by a letter of Final Acceptance as provided in the General Conditions to this Agreement.

§ 2.5.2 Final Completion means actual completion of the Work, including any extras or Change Orders reasonably required or contemplated under the Contract Documents other than warranty work that may be required pursuant to the Contract Documents.

§ 2.5.3 CONTRACTOR's general warranty period and guarantee will begin to run upon Final Completion as approved by OWNER, and following issuance of ENGINEER's letter of Final Acceptance.

3.0 CONTRACT SUM

§ 3.1 The OWNER shall pay the CONTRACTOR the Contract Sum in current funds for the CONTRACTOR's performance of the Contract. The Contract Sum shall be [insert written total] ([insert numerical total]) subject to additions and deductions as provided in the Contract Documents.

§ 3.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the OWNER:

[alternate __, if any]

[alternate __, if any]

§ 3.3 Unit prices, if any:

[insert any unit price items and descriptions] [or add reference to Proposal with unit prices and estimated quantities]

Item	Units and Limitations	Price Per Unit (\$0.00)
[unit price item]	[unit]	[price]

4.0 PAYMENT

§ 4.1 APPLICATIONS FOR PAYMENT

Each Application for Payment shall be based on the most recent schedule of values submitted by the CONTRACTOR in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Amount among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the ENGINEER and OWNER may require. This schedule, unless objected to by the ENGINEER or OWNER, shall be used as a basis for reviewing the CONTRACTOR's Applications for Payment.

§ 4.1.1 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. Unless otherwise noted, application for payment shall be done on a monthly basis.

§ 4.1.2 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1** Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of «Ten» percent («10.00» %). Pending final determination of cost to the OWNER of changes in the Work, amounts not in dispute shall be included;
- .2** Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the OWNER, suitably stored off the site at a location agreed upon in writing), less retainage of «Ten» percent («10.00» %);
- .3** Subtract the aggregate of previous payments made by the OWNER; and
- .4** Subtract amounts, if any, for which the ENGINEER has withheld or nullified a Certificate for Payment.

§ 4.1.3 If the total Contract Sum at the time of execution of this Agreement is less than \$400,000.00, the OWNER may elect to withhold retainage of ten percent (10%) from each progress payment in lieu of the retainage amounts set forth in Section 4.1.2.

§ 4.1.4 Reduction or limitation of retainage, if any, shall be as follows: Reduction or limitation of retainage shall be at the OWNER's sole discretion.

§ 4.1.5 Except with the OWNER's prior approval, the CONTRACTOR shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 4.2 FINAL PAYMENT

§ 4.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the OWNER to the CONTRACTOR when

- .1 the CONTRACTOR has fully performed the Contract except for the CONTRACTOR's responsibility to correct Work as provided in the General Conditions, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a letter of Final Acceptance has been issued by the ENGINEER and accepted by the OWNER.

§ 4.2.2 The OWNER's final payment to the CONTRACTOR shall be made no later than 30 days after the Work has been completed and accepted by the OWNER, in writing, following the issuance of the ENGINEER's final Certificate for Payment:

This Agreement is entered into as of the day and year written above ("The Date of Execution"):

OWNER

CONTRACTOR

By: _____
Title: _____

By: _____
Title: _____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____, as Principal herein, and [Surety], a corporation organized and existing under the laws of the State of [Surety's state of incorp] and who is authorized and admitted to issue surety bonds in the State of Texas, as surety, are held and firmly bound unto the City of Deer Park, Texas, a municipal corporation with its principal location of 710 E. San Augustine, Deer Park, Texas, Harris County, Obligee herein, in the sum of [printed amount of bond] Dollars (\$[numeric amount of bond]) for the payment of which sum we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has entered into a certain written contract with the Obligee dated the ____day of _____, 20____, herein referred to as "the Contract" and incorporated herein and made a part hereof for all purposes, for the construction of the following project: [project name].

NOW, THEREFORE, the condition of this obligation is such, if the said Principal shall faithfully perform the work in accordance with the plans, specifications, and other Contract Documents and shall fully indemnify and hold harmless the Obligee from all costs and damages which Obligee may suffer by reason of Principal's failure to perform the Work in conformity with the Contract Documents, and reimburse and repay Obligee for all outlay and expense that Obligee may incur in making good such default, then this obligation shall be void; otherwise, to remain in full force and effect. Whenever Contractor shall be declared by Obligee to be in default under the Contract, the Surety shall, upon request of Obligee and within seven (7) calendar days from receipt of Obligee's notice of Contractor's default, commence and thereafter complete performance of Contractor's obligations under the Contract. This Bond covers all contractual obligations of Contractor under the Contract, including, without limitation, the indemnity, warranty and guaranty obligations. The Surety stipulates and agrees that no change, extension of time, alteration, omission, addition or other modification to the terms of any of the Contract will affect its obligations on this bond, and it hereby waives notice of any such changes, extensions of time, alterations, omissions, additions, or other modifications, to the Contract or to related subcontracts, purchase orders or other obligations, and any notices provided in such regard shall not create as to any party a duty related thereto. The penal limit of this bond shall

automatically be increased by the amount of any change order, supplemental agreement or amendment which increases the price of the Contract.

PROVIDED, HOWEVER, that this bond is executed pursuant to Chapter 2253 of the Texas Government Code, as amended, and all rights and liabilities on this bond shall be determined in accordance with the provisions of such statute, to the same extent as if it were copied at length herein. All notices shall be delivered in writing to the addresses shown below or to addresses provided in the Contract Documents.

IN WITNESS WHEREOF, the duly authorized representatives of the Principal and the Surety have executed this instrument.

SIGNED and SEALED this _____ day of _____, 20__.

The date of bond shall not be prior to date of Contract.

ATTEST:

(Principal) Secretary

(S E A L)

Witness as to Principal

ATTEST:

Secretary

(S E A L)

Witness as to Surety

PRINCIPAL

By: _____

Name: _____

Title: _____

Address: _____

Telephone Number: _____

SURETY

By: _____

Name: _____
Attorney in Fact

Address: _____

Telephone Number: _____

An original copy of Power of Attorney shall be attached to Bond by the Attorney-in-Fact.

Approved as to Form:

City of Deer Park
710 E. San Augustine
Deer Park, Texas 77536

By: _____

Title: _____

Date: _____

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____, as Principal herein, and [Surety], a corporation organized and existing under the laws of the State of [Surety's state of incorp] and who is authorized and admitted to issue surety bonds in the State of Texas, as surety, are held and firmly bound unto the City of Deer Park, Texas, a municipal corporation with its principal location of 710 E. San Augustine, Deer Park, Texas, Harris County, Obligee herein, in the sum of [printed amount of bond] Dollars (\$[numeric amount of bond]) for the payment of which sum we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents:

WHEREAS, Principal has entered into a certain written contract with the Obligee dated the ____ day of _____, 20____, which contract is hereby referred to herein as "the Contract" and is incorporated herein to the same extent as if copied at length, for the following project: [project name].

NOW, THEREFORE, the condition of this obligation is such, that if the said Principal shall directly or indirectly timely make payment to each and every claimant (as defined in Chapter 2253, Texas Government Code, as amended) supplying labor or materials in the prosecution of the work under the Contract, then this obligation shall be void; otherwise, to remain in full force and effect. *This obligation may be enforced by the Obligee in the event of bankruptcy or default by Principal in payments to suppliers of labor or materials in the prosecution of the work under the Contract, in either of which events the Surety shall make such payments as Principal has failed to pay and as may be required to complete the work under the contract.* The Surety stipulates and agrees that no change, extension of time, alteration, omission, addition or other modification to the terms of the Contract will affect its obligations on this bond, and it hereby waives notice of any such changes, extensions of time, alterations, omissions, additions, or other modifications, to the Contract or to related subcontracts, purchase orders or other obligations, and any notices provided in such regard shall not create as to any party a duty related thereto.

PROVIDED, HOWEVER, that this bond is executed pursuant to Chapter 2253 of the Texas Government Code, as amended, and all rights and liabilities on this bond shall be determined in accordance with the provisions of said statute, to the same extent as if it were

copied at length herein. All notices shall be delivered in writing to the addresses shown below or to addresses provided in the Contract Documents.

IN WITNESS WHEREOF, the duly authorized representatives of the Principal and the Surety have executed this instrument.

SIGNED and SEALED this _____ day of _____, 20____.

The date of bond shall not be prior to date of Contract.

ATTEST:

(Principal) Secretary

(S E A L)

Witness as to Principal

PRINCIPAL

By: _____

Name: _____

Title: _____

Address: _____

Telephone Number: _____

ATTEST:

Secretary

(S E A L)

Witness as to Surety

SURETY

By: _____

Name: _____
Attorney in Fact

Address: _____

Telephone Number: _____

An original copy of Power of Attorney shall be attached to Bond by the Attorney-in-Fact.

Approved as to Form:

City of Deer Park
710 E. San Augustine
Deer Park, Texas 77536

By: _____

Title: _____

Date: _____

DOCUMENT 000107

SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

LANDSCAPE
ARCHITECT

Jamie Hendrixson
#2205
Divisions 01 – 49, Divisions 1 – 16
Sections except where indicated as
prepared by other design professionals
of record



END OF DOCUMENT 000107

DATE

DOCUMENT 000107-2

DEER PARK NATURE PRESERVE

SEALS PAGE

DOCUMENT 000107

SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

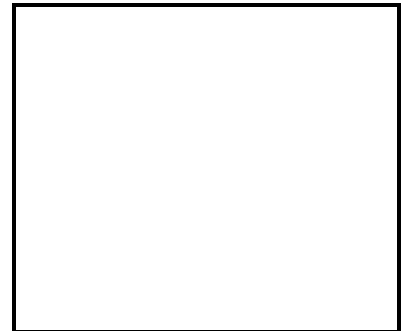
CIVIL ENGINEER

PATRICIA FRAYRE

<Insert license #>

The following Sections:

<Insert list of Sections>



END OF DOCUMENT 000107

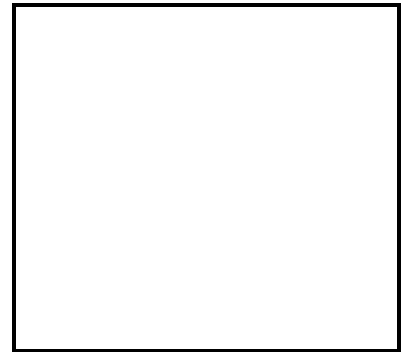
DOCUMENT 000107

SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

STRUCTURAL
ENGINEER

Mike Hulbert
<Insert license #>
The following Sections:
<Insert list of Sections>



END OF DOCUMENT 000107

DOCUMENT 000115

LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

- A. Drawings: Drawings consist of the Contract Drawings and other drawings listed on the Table of Contents page of the separately bound drawing set titled Deer Park Nature Preserve, dated September 7, 2016, as modified by subsequent Addenda and Contract modifications.

END OF DOCUMENT 000115

DOCUMENT 001113**ADVERTISEMENT FOR BIDS****1.1 PROJECT INFORMATION**

- A. Notice to Bidders: Qualified bidders may submit bids for project as described in this Document. Submit bids according to the Instructions to Bidders.
- B. Project Identification: Deer Park Nature Preserve.
 - 1. Project Location: East Thirteenth Street, Deer Park, TX .
- C. Owner: Deer Park Park and Recreation Department.
 - 1. Owner's Representative: Scott Swigert, 281-478-2050, sswigert@deerparktx.org.
- D. Landscape Architect: Jamie Hendrixson, 713-621-825, jhendrixson@rviplanning.com.
- E. Project Description: Project consists of gateway signage, permeable parking lot, decomposed granite trail, trail lighting, and landscape planting and irrigation.
 - 1. Project cost range is anticipated to be under \$743,000.
- F. Construction Contract: Bids will be received for the following Work:
 - 1. General Contract (all trades).

1.2 BID SUBMITTAL AND OPENING

- A. Owner will receive sealed lump sum bids until the bid time and date at the location given below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:
 - 1. Bid Date: <Insert date>.
 - 2. Bid Time: [2:00 p.m.] <Insert time>, local time.
 - 3. Location: <Insert bid receipt's location and room name>, <Insert street address>, <Insert city, state, and zip code>.
- B. Bids will be thereafter publicly opened and read aloud.

1.3 BID SECURITY

- A. Bid security shall be submitted with each bid in the amount of 5 percent of the bid amount. No bids may be withdrawn for a period of 60 days after opening of bids. Owner reserves the right to reject any and all bids and to waive informalities and irregularities.

1.4 PREBID MEETING

- A. Prebid Meeting: See Document 002513 "Prebid Meetings."
- B. Prebid Meeting: A Prebid meeting for all bidders will be held at **<Insert location>** on **<Insert date>** at **[10:00 a.m.] <Insert time>**, local time. Prospective prime bidders are **[requested]** **[required]** to attend.
 - 1. Bidders' Questions: Landscape Architect will provide responses at Prebid conference to bidders' questions received up to **[two] <Insert number>** business days prior to conference.

1.5 DOCUMENTS

- A. Online Procurement and Contracting Documents: Obtain access after **<Insert date>**, by contacting **<Insert Owner, Landscape Architect, or reprographic house address>**. Online access will be provided to **[prime bidders only]** **[all registered bidders and suppliers]**.
- B. Viewing Procurement and Contracting Documents: Examine after **<Insert date>**, at the locations below:
 - 1. RVi Planning + Landscape Architecture, 19 Briar Hollow Lane, Suite 145, Houston, TX 77027.

1.6 TIME OF COMPLETION AND LIQUIDATED DAMAGES

- A. Successful bidder shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time.
- B. Work is subject to liquidated damages.

1.7 BIDDER'S QUALIFICATIONS

- A. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. A Performance Bond, separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.

1.8 NOTIFICATION

- A. This Advertisement for Bids document is issued by **<Insert name, title, and agency name>**.

DOCUMENT 001154
CONTRACTOR'S QUALIFICATION STATEMENT

The Owner desires to contract with a Contractor who, in the opinion of the Owner, is fully qualified and experienced to perform the work on this project. The Contractor is required to have completed three (3) projects of similar scope within the last five (5) years

The Bidder is required to supply the following information to the Owner with the Document 004113 "Bid Form". Additional sheets may be attached as necessary.

Bidder Name: _____

Address: _____

Phone Number: _____

Type of Firm (partnership, corporation, etc.): _____

List the names and addresses of all members of the firm or names and titles of all officers of the corporation.

Name

Address

Name

Address

Name

Address

(1) Number of years and experience under present firm name: _____

- (2) List and describe at least three (3) similar projects completed within the last five (5) years:

Name, Address, & Telephone Number of Owner	Contract Amount	Date Completed	Description of Project

- (3) Has your firm ever defaulted on a contract?
- (4) If so, explain where and why?
- (5) Attach statements of background and experience of the firm and principal members of your organization, including the proposed project superintendent.
- (6) Attach a list of all current work under contract and/or under construction.
- (7) Attach a list of construction equipment currently available for this contract.

- (8) List the name and address of each subcontractor who will perform work in or about the work or improvement in excess of one-half (1/2) of one (1%) percent of the total bid price and indicate what part of the work will be done by each subcontractor:

Name	Address	Portion of Work

- (9) The Owner will require submittal of the apparent successful Bidder's most recent financial statement.

DOCUMENT 002113**INSTRUCTIONS TO BIDDERS**

OWNER: Deer Park Park and Recreation Department
610 E. San Augustine
Deer Park, TX 77536
Attn: Scott Swigert

LANDSCAPE ARCHITECTS: RVi Planning + Landscape Architecture
19 Briar Hollow Lane, Suite 145
Houston, TX 77027
Attn: Jamie Hendrixson

PROJECT: Deer Park Nature Preserve
Deer Park, TX

- 1) **Scope of the Project.** The Project consists of all labor and materials necessary to complete landscape and hardscape installations at Deer Park Nature Preserve, located in Deer Park, TX as illustrated in the Construction Drawings and by the Project Manual for "Deer Park Nature Preserve," all dated <insert date>.
 - a) Contractor is responsible for locating all existing utilities prior to starting work.
 - b) Contractor is responsible for obtaining all necessary construction licenses, permits, and approvals.
 - c) Contractor is responsible for all permit and inspection fees.
- 2) **Documents:** Bidders may obtain digital sets of Bidding Documents from the Landscape Architect. No partial sets will be issued and no sets will be issued to Sub-Bidders.
- 3) **Substitutions:** Requests for substitutions will be considered only when submitted as required in Submittal Procedures:
- 4) **Basis of Bid:** The Owner reserves the right to reject any and all Bids and is under no obligation to accept any Bid. The Bidder must include all unit cost items shown on the Bid Form.
- 5) **Preparation of Bids:** Bids shall be made on Bid Form furnished in this manual. Incomplete Bids will not be considered. Submit three (3) signed copies. Where Bidder is a corporation, Bids shall be signed with the legal name of the corporation followed by the name of the State of Incorporation and the legal signature of an officer authorized to bind the corporation to a Contract.
 - a) Prior to submitting a Bid, Bidders shall carefully review site conditions, Drawings, Specifications, and Bid Documents. Bidders are required to familiarize themselves with the Work, quality, and performance schedule of the Client.
 - b) Bidder shall provide current Certificates of Liability Insurance and Workman's Compensation

- Insurance.
- c) Bidder to include all applicable sales tax in Bid amounts.
- 6) **Subcontractors:** Provide names of principal subcontractors and suppliers and attach to the Bid.
- 7) **Licensure:** No Bid will be considered unless the Bidder has submitted evidence of licensure to provide required services within the jurisdiction in which the project site is located.
- 8) **Schedules:**
- a) Pre-Bid Meeting: A pre-bid meeting will be held on <insert time and date> at the project site.
- b) Bid Date: Bids will be received in the offices of <insert company and address> until <insert time and date>. Bidders will be notified of successful bidder within one (1) week of the Bid opening.
- c) Construction: Construction shall begin by <insert date>.
- 9) **Execution of Contract:** Each Bidder shall be prepared, upon written notice of Bid Acceptance, to commence work following approval to proceed and to work towards a completion on <insert date>. The accepted Bidder shall assist the Owner in preparing a formal Contract Agreement. Contractor shall submit a Schedule of Values and detailed Construction Schedule prior to Execution of the Contract. No extensions will be granted.

END OF DOCUMENT 002113

DOCUMENT 002513**PREBID MEETINGS****1.1 PREBID MEETING**

- A. Owner will conduct a Pre-bid meeting as indicated below:
 - 1. Meeting Date: **<Insert date>**.
 - 2. Meeting Time: **<Insert time>**, local time.
 - 3. Location: **<Insert meeting location and room name>**, **<Insert street address>**, **<Insert city, state, and zip code>**.
- B. Attendance:
 - 1. Prime Bidders: Attendance at Pre-bid meeting is mandatory.
 - 2. Subcontractors: Attendance at Pre-bid meeting is recommended.
 - 3. Notice: Bids will only be accepted from prime bidders represented on Pre-bid Meeting sign-in sheet.
- C. Agenda: Pre-bid meeting agenda will include review of topics that may affect proper preparation and submittal of bids, including the following:
 - 1. Procurement and Contracting Requirements:
 - a. Advertisement for Bids.
 - b. Instructions to Bidders.
 - c. Bidder Qualifications.
 - d. Bonding.
 - e. Insurance.
 - f. Bid Security.
 - g. Bid Form and Attachments.
 - h. Bid Submittal Requirements.
 - i. Bid Submittal Checklist.
 - j. Notice of Award.
 - 2. Communication during Bidding Period:
 - a. Obtaining documents.
 - b. Access to Project Web site.
 - c. Bidder's Requests for Information.
 - d. Bidder's Substitution Request/Prior Approval Request.
 - e. Addenda.
 - 3. Contracting Requirements:

- a. Agreement.
 - b. The General Conditions.
 - c. The Supplementary Conditions.
 - d. Other Owner requirements.
 - 4. Construction Documents:
 - a. Scopes of Work.
 - b. Temporary Facilities.
 - c. Use of Site.
 - d. Work Restrictions.
 - e. Alternates, Allowances, and Unit Prices.
 - f. Substitutions following award.
 - 5. Separate Contracts:
 - a. Work by Owner.
 - b. Work of Other Contracts.
 - 6. Schedule:
 - a. Project Schedule.
 - b. Contract Time.
 - c. Liquidated Damages.
 - d. Other Bidder Questions.
 - 7. Site/facility visit or walkthrough.
 - 8. Post-Meeting Addendum.
- D. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to attendees. Minutes of meeting are issued as Available Information and do not constitute a modification to the Procurement and Contracting Documents. Modifications to the Procurement and Contracting Documents are issued by written Addendum only.
- 1. Sign-in Sheet: Minutes will include list of meeting attendees.
 - 2. List of Planholders: Minutes will include list of planholders.

END OF DOCUMENT 002513

DOCUMENT 002600**PROCUREMENT SUBSTITUTION PROCEDURES****1.1 DEFINITIONS**

- A. Procurement Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Procurement and Contracting Documents, submitted prior to receipt of bids.
- B. Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Contract Documents, submitted following Contract award. See Section 012500 "Substitution Procedures" for conditions under which Substitution requests will be considered following Contract award.

1.2 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.3 PROCUREMENT SUBSTITUTIONS

- A. Procurement Substitutions, General: By submitting a bid, the Bidder represents that its bid is based on materials and equipment described in the Procurement and Contracting Documents, including Addenda. Bidders are encouraged to request approval of qualifying substitute materials and equipment when the Specifications Sections list materials and equipment by product or manufacturer name.
- B. Procurement Substitution Requests will be received and considered by Owner when the following conditions are satisfied, as determined by Landscape Architect; otherwise requests will be returned without action:
 - 1. Extensive revisions to the Contract Documents are not required.
 - 2. Proposed changes are in keeping with the general intent of the Contract Documents, including the level of quality of the Work represented by the requirements therein.
 - 3. The request is fully documented and properly submitted.

1.4 SUBMITTALS

- A. Procurement Substitution Request: Submit to Landscape Architect. Procurement Substitution Request must be made in writing by prime contract Bidder only in compliance with the following requirements:
1. Requests for substitution of materials and equipment will be considered if received no later than 10 days prior to date of bid opening.
 2. Submittal Format: Submit Procurement Substitution Request, using format provided below:
 - a. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specifications Sections and drawing numbers.
 - b. Provide complete documentation on both the product specified and the proposed substitute, including the following information as appropriate:
 - 1) Point-by-point comparison of specified and proposed substitute product data, fabrication drawings, and installation procedures.
 - 2) Copies of current, independent third-party test data of salient product or system characteristics.
 - 3) Samples where applicable or when requested by Landscape Architect.
 - 4) Detailed comparison of significant qualities of the proposed substitute with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - 5) Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - 6) Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, which will become necessary to accommodate the proposed substitute.
 - c. Provide certification by manufacturer that the substitute proposed is equal to or superior to that required by the Procurement and Contracting Documents, and that its in-place performance will be equal to or superior to the product or equipment specified in the application indicated.
 - d. Bidder, in submitting the Procurement Substitution Request, waives the right to additional payment or an extension of Contract Time because of the failure of the substitute to perform as represented in the Procurement Substitution Request.
- B. Landscape Architect's Action:
1. Architect may request additional information or documentation necessary for evaluation of the Procurement Substitution Request. Architect will notify all bidders of

acceptance of the proposed substitute by means of an Addendum to the Procurement and Contracting Documents.

- C. Architect's approval of a substitute during bidding does not relieve Contractor of the responsibility to submit required shop drawings and to comply with all other requirements of the Contract Documents.

END OF DOCUMENT 002600

DOCUMENT 003132

GEOTECHNICAL DATA

1.1 GEOTECHNICAL DATA

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.
- B. Soil-boring data for Project, obtained by RVi, dated November 17, 2015, is available for viewing at the office of Landscape Architect and as appended to this Document.
- C. A geotechnical investigation report for Project, prepared by Terracon Consultants, Inc., dated November 17, 2015, is available for viewing at the office of Landscape Architect and as appended to this Document.
- D. Related Requirements:
 - 1. Document 002113 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.

END OF DOCUMENT 003132

DOCUMENT 004113
BID FORM

TO: RVi Planning + Landscape Architecture
Attn: Project Manager
19 Briar Hollow Lane, Suite 145
Houston, TX 77027

CC: Client
Attn: Scott Swigert
610 E. San Augustine
Deer Park, TX 77536

FROM: Name of Company: _____
Legal Address: _____
City, State, and Zip Code: _____
Telephone: _____
Texas Contractor's License No.: _____
Type and Class of License: _____
Federal I.D. No.: _____
Texas Sales Tax No.: _____

PROJECT: Deer Park Nature Preserve
Deer Park, TX
RVi Project No. 154382

1. **ACKNOWLEDGEMENT:** I have received the Project Manual "Deer Park Nature Preserve", dated <Insert Project Date> and Construction Drawings, similarly entitled and dated <Insert Date>, and prepared by RVi Planning + Landscape Architecture, 19 Briar Hollow Lane, Suite 145, Houston TX 77027. I have also received Addenda nos. _____ and have included their provisions in my Bid. I have carefully examined both the documents and the site and submit the following Bid.
2. **AGREEMENT.** I agree to the following:
 - A. To hold my Bid open for 30 days.
 - B. To enter into and execute a Contract, if awarded on the basis of this Bid, to furnish all bonds and insurance required by the Bidding Documents.
 - C. To accomplish the Work, including all labor, materials, and equipment, in accordance with the

Contract Documents.

- D. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Owner, and shall fully complete the Work within **<Insert number>** consecutive calendar days.

3. **BASE BID.** I will construct this project for the Lump-Sum price (including all applicable taxes) of:

Phase <Insert Phase Number> _____ Dollars (\$ _____)

4. **ALTERNATES**

Provide bid prices for each alternate that applies to the contract of this Bid. Provide or deduct the work described under each Alternate, complete and in-place including provision for labor, materials, required permit and fee costs, and a proportionate share contractor's overhead and profit.

Alternate No. 1

<description of alternate>

Add/Deduct the amount of _____ Dollars (\$ _____)

Alternate No. 2

<description of alternate>

Add/Deduct the amount of _____ Dollars (\$ _____)

Alternate No. 3

<description of alternate>

Add/Deduct the amount of _____ Dollars (\$ _____)

5. **UNIT PRICES.** The Contractor shall provide unit prices for all items on the following list for use in changes to the Contract Documents, if required. If the quantities of the following items are increased or decreased, the Contract Sum will be adjusted in accordance with the following rates. All unit prices are for completed work and include all labor, materials, equipment, taxes, overhead, profit, any required maintenance, and warranty.

A. BASE BID		Unit	Qty.	Unit Cost	Total
1.	Wetland Restoration/ Selective Clearing	LS	1		\$
2.	Parking Lot (Permeable)	LS	1		\$
3.	Main Trail (8' Decomposed Granite: 3,300 lf)	SF	26,400		\$
4.	Gateway Signage	LS	1		\$
5.	Gateway Surfacing (Decomposed Granite)	SF	450		\$
6.	Solar Trail Lighting	EA	7		\$
7.	Raised Planter (Varied Height)	LF	60		\$
8.	Decorative Panels	EA	3		\$
9.	Decorative Star Paving Pattern	EA	1		\$
10.	Gardenia (3 gal)	EA	9		\$
11.	Texas Sage (3 gal)	EA	11		\$
12.	Curry Plant (1 gal)	EA	22		\$
13.	Spanish Lavender (1 gal)	EA	19		\$
14.	Lemon Bee Balm (1 gal)	EA	49		\$
15.	Gulf Coast Muhly (3 gal)	EA	9		\$
16.	Mexican Feather Grass (3 gal)	EA	8		\$
17.	Switch Grass (3 gal)	EA	6		\$
18.	Dwarf Rosemary (1 gal)	EA	21		\$
19.	Black-Eyed Susan (1 gal)	EA	22		\$
20.	Little Bluestem (3 gal)	EA	8		\$
21.	Lamb's Ear (1 gal)	EA	8		\$
22.	Texas Mint Marigold (1 gal)	EA	10		\$
23.	Complete Solar Irrigation System (meter, backflow, solar panel, etc)	LS	1		\$
				Subtotal	\$
TOTAL AMOUNT BASE BID		\$			
B. DEDUCT ALTERNATE ITEMS		Unit	Qty.	Unit Cost	Total
1.	Decorative Panels	EA	3		\$
2.	Decorative Star Paving Pattern	EA	1		\$

6. **ATTACHMENTS.** I have attached the required bid security and subcontractor listing to this Bid.

7. **CONTRACTOR'S LICENSE.** The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in Deer Park, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

Submitted by:

Signed: _____

Printed Name: _____

Title: _____

Company: _____

Address: _____

Date: _____

END OF DOCUMENT 004113

DOCUMENT 004313

BID SECURITY FORMS

1.1 BID FORM SUPPLEMENT

- A. A completed bid bond form is required to be attached to the Bid Form.

1.2 BID BOND FORM

- A. AIA Document A310, "Bid Bond," is the recommended form for a bid bond. A bid bond acceptable to Owner, or other bid security as described in the Instructions to Bidders, is required to be attached to the Bid Form as a supplement.
- B. Copies of AIA standard forms may be obtained from The American Institute of Architects; www.aia.org/contractdocs/purchase/index.htm; email: docspurchases@aia.org; (800) 942-7732.

END OF DOCUMENT 004313

DOCUMENT 009113**ADDENDUM****1.1 PROJECT INFORMATION**

- A. Project Name: Deer Park Nature Preserve.
- B. Owner: Deer Park Park and Recreation Department.
- C. Landscape Architect: Jamie Hendrixson.
- D. Landscape Architect Project Number: 154382.
- E. Date of Addendum: **<Insert date of Addendum>**.

1.2 NOTICE TO BIDDERS

- A. This Addendum is issued to all registered plan holders pursuant to the Instructions to Bidders and Conditions of the Contract. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.
- B. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.
- C. The date for receipt of bids is **[unchanged by this Addendum] [changed to the following]**, at same time and location.
 - 1. Bid Date: **<Insert date>**.

1.3 ATTACHMENTS

- A. This Addendum includes no attachments.
- B. This Addendum includes the following attached Documents and Specification Sections:
 - 1. Document **<Insert Document number and name>**, dated **<Insert date>**, **[(reissued)] [(new)]**.
 - 2. Section **<Insert Section number and name>**, dated **<Insert date>**, **[(reissued)] [(new)]**.
- C. This Addendum includes the following attached Sheets:

1. General Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
2. Civil Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
3. Landscape Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
4. Structural Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].
5. Landscape Architectural Sheet <Insert number>, dated <Insert date>, [(reissued)] [(new)].

D. This Addendum includes the attached Addendum Drawings:

1. Civil Addendum Drawing CAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
2. Landscape Addendum Drawing LAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
3. Structural Addendum Drawing SAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.
4. Landscape Architectural Addendum Drawing AAD-<Insert number>, dated <Insert date>, revising Sheet <Insert number>.

1.4 REVISIONS TO PREVIOUS ADDENDA

A. Addendum No. 1, Item <Insert number>: Document <Insert Document number and name>, [(not reissued)] [(reissued)] [(new document)].

1. Paragraph <Insert number>: <Insert explanatory text>.

B. Addendum No. 1, Item <Insert number>: Specification Section <Insert Section number and name>, [(not reissued)] [(reissued)] [(new document)].

1. Paragraph <Insert number>: <Insert explanatory text>.

1.5 REVISIONS TO DIVISION 00 PROCUREMENT REQUIREMENTS AND CONTRACTING REQUIREMENTS

A. Document <Insert Document number and name>, (not reissued).

1. Paragraph <Insert number>: <Insert explanatory text>.

1.6 REVISIONS TO DIVISION 01 GENERAL REQUIREMENTS

A. Specification Section <Insert Section number and name>, (not reissued).

1. Paragraph <Insert number>: <Insert explanatory text>.

1.7 REVISIONS TO DIVISIONS 02 - 49 SPECIFICATION SECTIONS

- A. Specification Section **<Insert section number and name>**, (not reissued).
 - 1. Paragraph **<Insert number>**: **<Insert explanatory text>**.

1.8 REVISIONS TO DRAWING SHEETS

- A. Sheet **<Insert number>** - **<Insert title>** (not reissued).
 - 1. Drawing **<Insert number>**: **<Insert explanatory text>**.

END OF DOCUMENT 009113

SECTION 011000

SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Access to site.
 - 4. Work restrictions.
 - 5. Specification and drawing conventions.
 - 6. Miscellaneous provisions.

1.3 PROJECT INFORMATION

- A. Project Identification: Deer Park Nature Preserve, #154382.
 - 1. Project Location: East Thirteenth Street, Deer Park, TX.
- B. Owner: Deer Park Park and Recreation.
 - 1. Owner's Representative: Scott Swigert, 281-478-2050, sswigert@deerparktx.org.
- C. Landscape Architect: Jamie Hendrixson, 713-621-8025, jhendrixson@rviplanning.com.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Gateway monument, permeable parking lot, decomposed granite trail, trail lighting, and landscape planting and irrigation.
- B. Type of Contract:
 1. Project will be constructed under a single prime contract.

1.5 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- C. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 1. Limits: Confine construction operations to "Limit of Construction" areas shown on drawings.

1.6 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of <Insert time> a.m. to <Insert time> p.m., Monday through Friday, unless otherwise indicated.
 1. Weekend Hours: <Insert restrictions on times permitted for weekend work>.
 2. Early Morning Hours: <Insert restrictions or references to regulations by authorities having jurisdiction for restrictions on noisy work>.
 3. Hours for Utility Shutdowns: <Insert Owner's restrictions>.
 4. Hours for [Core Drilling] <Insert noisy activity>: <Insert Owner's restrictions>.
- C. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.8 MISCELLANEOUS PROVISIONS

- A. <Insert miscellaneous provisions>.

PART 2 - PRODUCTS (Not Used)**PART 3 - EXECUTION (Not Used)**

END OF SECTION 011000

SECTION 012500**SUBSTITUTION PROCEDURES****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use **[CSI Form 13.1A]** **[facsimile of form provided in Project Manual]**.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

- b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Landscape Architect's Action: If necessary, Landscape Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Landscape Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Landscape Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS**2.1 SUBSTITUTIONS**

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Landscape Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Landscape Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Not allowed.

January 06, 2017

SECTION 012500-4

DEER PARK NATURE PRESERVE

SUBSTITUTION PROCEDURES

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600**CONTRACT MODIFICATION PROCEDURES****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Landscape Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Landscape Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Landscape Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

DEER PARK NATURE PRESERVE

CONTRACT MODIFICATION PROCEDURES

- b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Landscape Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Landscape Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form acceptable to Landscape Architect.

1.5 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Landscape Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Work Change Directive: Form provided by Landscape Architect may issue a Work Change Directive on AIA Document G714. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.

DEER PARK NATURE PRESERVE

CONTRACT MODIFICATION PROCEDURES

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900**PAYMENT PROCEDURES****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Landscape Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Bid Form as a guide to establish line items for the schedule of values.

DEER PARK NATURE PRESERVE

PAYMENT PROCEDURES

1. Arrange schedule of values consistent with format of AIA Document G703.
2. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of **[five]** **<Insert number>** percent of the Contract Sum.
3. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
4. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
5. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Landscape Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Times: Submit Application for Payment to Landscape Architect by the **<Insert day>** of the month. The period covered by each Application for Payment is one month, ending on the **[last day of the month]** **<Insert specific day of the month>**.
 1. Submit draft copy of Application for Payment **[seven]** **<Insert number>** days prior to due date for review by Landscape Architect.
- D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Landscape Architect will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.

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2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Work Change Directives issued before last day of construction period covered by application.
- F. Stored Materials: Do not include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed.
- G. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Landscape Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- I. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner.
- J. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).

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4. Products list (preliminary if not final).
 5. Submittal schedule (preliminary if not final).
 6. List of Contractor's staff assignments.
 7. List of Contractor's principal consultants.
 8. Copies of building permits.
 9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 10. Initial progress report.
 11. Report of preconstruction conference.
 12. Certificates of insurance and insurance policies.
 13. Performance and payment bonds.
- K. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- L. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)**PART 3 - EXECUTION (Not Used)**

END OF SECTION 012900

SECTION 013100**PROJECT MANAGEMENT AND COORDINATION****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project Web site.
 - 5. Project meetings.
- B. Related Requirements:
 - 1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 2. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request from Owner, Landscape Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.

1.6 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 1. Landscape Architect will return RFIs submitted to Landscape Architect by other entities controlled by Contractor with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Landscape Architect.

6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Landscape Architect.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Landscape Architect's Action: Landscape Architect will review each RFI, determine action required, and respond. Allow seven working days for Landscape Architect's response for each RFI. RFIs received by Landscape Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Landscape Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Landscape Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 3. Landscape Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Landscape Architect in writing within 10 days of receipt of the RFI response.

- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log twice a month. Software log with not less than the following:
 - 1. Project name.
 - 2. Name and address of Contractor.
 - 3. Name and address of Landscape Architect.
 - 4. RFI number including RFIs that were returned without action or withdrawn.
 - 5. RFI description.
 - 6. Date the RFI was submitted.
 - 7. Date Landscape Architect's response was received.
- F. On receipt of Landscape Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Landscape Architect within seven days if Contractor disagrees with response.
 - 1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

- A. General: Landscape Architect will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Landscape Architect of scheduled meeting dates and times.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Contractor, and Landscape Architect, within three days of the meeting.
- B. Preconstruction Conference: Landscape Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Landscape Architect, but no later than 15 days after execution of the Agreement.
- C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.
 - 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Landscape Architect of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

- a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility requirements.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Landscape Architect will schedule and conduct a project closeout conference, at a time convenient to Owner and Landscape Architect, but no later than 15 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Landscape Architect, and their consultants; Contractor and its superintendent; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Preparation of Contractor's punch list.
 - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - i. Submittal procedures.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Landscape Architect will conduct progress meetings at regular intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner and Landscape Architect, each contractor, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.

- 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of proposal requests.
 - 15) Pending changes.
 - 16) Status of Change Orders.
 - 17) Pending claims and disputes.
 - 18) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - **PRODUCTS** (Not Used)

PART 3 - **EXECUTION** (Not Used)

END OF SECTION 013100

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 3. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Landscape Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Landscape Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Landscape Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 - 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Landscape Architect's final release or approval.
 - g. Scheduled date of fabrication.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Landscape Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Landscape Architect for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Landscape Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Landscape Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.
 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Landscape Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Re-submittal Review: Allow 15 days for review of each re-submittal.
 4. Sequential Review: Where sequential review of submittals by Landscape Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
- D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately **6 by 8 inches** on label or beside title block to record Contractor's review and approval markings and action taken by Landscape Architect.
 3. Include the following information for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name of Landscape Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of subcontractor.
 - g. Name of supplier.
 - h. Name of manufacturer.
 - i. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Re-submittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - j. Number and title of appropriate Specification Section.
 - k. Drawing number and detail references, as appropriate.

- l. Location(s) where product is to be installed, as appropriate.
 - m. Other necessary identification.
- 4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Landscape Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Landscape Architect.
- 5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Landscape Architect will return without review submittals received from sources other than Contractor.
 - a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
 - 1) Project name.
 - 2) Date.
 - 3) Destination (To:).
 - 4) Source (From:).
 - 5) Name and address of Landscape Architect.
 - 6) Name of Construction Manager.
 - 7) Name of Contractor.
 - 8) Name of firm or entity that prepared submittal.
 - 9) Names of subcontractor, manufacturer, and supplier.
 - 10) Category and type of submittal.
 - 11) Submittal purpose and description.
 - 12) Specification Section number and title.
 - 13) Specification paragraph number or drawing designation and generic name for each of multiple items.
 - 14) Drawing number and detail references, as appropriate.
 - 15) Indication of full or partial submittal.
 - 16) Transmittal number, numbered consecutively.
 - 17) Submittal and transmittal distribution record.
 - 18) Remarks.
 - 19) Signature of transmitter.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
 - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 - 2. Name file with submittal number or other unique identifier, including revision identifier.

- a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Re-submittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Landscape Architect.
4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Landscape Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor, manufacturer, and supplier.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - j. Specification Section number and title.
 - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - l. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Related physical samples submitted directly.
 - o. Indication of full or partial submittal.
 - p. Transmittal number[, **numbered consecutively**].
 - q. Submittal and transmittal distribution record.
 - r. Other necessary identification.
 - s. Remarks.
- F. Options: Identify options requiring selection by Landscape Architect.
- G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Landscape Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- H. Re-submittals: Make re-submittals in same form and number of copies as initial submittal.
 1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Landscape Architect's action stamp.

- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Landscape Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Submit electronic submittals via email as PDF electronic files.
 - a. Landscape Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 - 2. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Landscape Architect will return two copies.
 - 3. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated Landscape Architect will not return copies.
 - 4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
 6. Submit Product Data in the following format:
 - a. PDF electronic file.
 - b. Three paper copies of Product Data unless otherwise indicated. Landscape Architect will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least **8-1/2 by 11 inches**, but no larger than **30 by 42 inches**.
 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
 - b. Two opaque (bond) copies of each submittal Landscape Architect will return one copy(ies).
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.

- d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
- 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
- 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
- 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit two full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Landscape Architect will return submittal with options selected.
- 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit two sets of Samples. Landscape Architect will retain one Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file.
 - b. Three paper copies of product schedule or list unless otherwise indicated. Landscape Architect will return two copies.
- F. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- G. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- H. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of landscape architects and owners, and other information specified.
- I. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- J. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- K. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- L. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- M. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- N. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

PART 3 - EXECUTION**3.1 CONTRACTOR'S REVIEW**

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Landscape Architect.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 LANDSCAPE ARCHITECT'S ACTION

- A. Action Submittals: Landscape Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Landscape Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Landscape Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Landscape Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Landscape Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for re-submittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

SECTION 015639**TEMPORARY TREE AND PLANT PROTECTION****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

1.3 DEFINITIONS

- A. Caliper: Diameter of a trunk measured **6 inches** above the ground for trees up to, and including, **4-inch** size; and **12 inches** above the ground for trees larger than **4-inch** size.
- B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- C. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each type of the following:
 - 1. Organic Mulch: **1-quart** volume of organic mulch; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch.
 - 2. Protection-Zone Signage: Full-size Samples of each size and text, ready for installation.
- C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
 - 1. Species and size of tree.

2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Certified Arborist and tree service firm.
- B. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
- C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.
- D. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
 1. Use sufficiently detailed photographs or videotape.
 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.6 QUALITY ASSURANCE

- A. Arborist Qualifications: Certified Arborist, as certified by ISA.
- B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.
- C. Pre-installation Conference: Conduct conference at Project site.
 1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
 - a. Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.
 - b. Enforcing requirements for protection zones.
 - c. Certified Arborist's responsibilities.
 - d. Field quality control.

1.7 PROJECT CONDITIONS

- A. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Erection of sheds or structures.
 - 4. Impoundment of water.
 - 5. Excavation, unless otherwise indicated.
 - 6. Attachment of signs to or wrapping materials around trees or plants.
- B. Do not direct vehicle or equipment exhaust toward protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil: Natural or cultivated top layer of the soil profile or manufactured topsoil; containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch in diameter; and free of weeds, roots, and toxic and other non-soil materials.
 - 1. Obtain topsoil only from well-drained sites where topsoil is 4 inches deep or more; do not obtain from bogs or marshes.
- B. Topsoil: **[Stockpiled topsoil from location shown on Drawings] [Imported or manufactured topsoil complying with ASTM D 5268] <Insert requirement>.**
- C. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
 - 1. Type: Shredded hardwood.
 - 2. Depth: **3 inches.**
 - 3. Color: Natural.
- D. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements.
 - 1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with **2-inch** maximum opening in

pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet apart.

- a. Height: 4 feet.
 - b. Color: High-visibility orange, non-fading.
- E. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes pre-punched and reinforced; legibly printed with non-fading lettering and as follows:
1. Size and Text: Arial; As shown on Drawings.
 2. Lettering: 3-inch high minimum, red characters on white background.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- B. For the record, prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

- A. Locate and clearly identify trees, shrubs, and other vegetation to remain. Tie a 1-inch blue-vinyl tape around each tree trunk at 54 inches above the ground.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.3 TREE- AND PLANT-PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people and animals from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle

intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

1. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Landscape Architect.
- B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Landscape Architect. Install one sign spaced approximately every **50 feet** on protection-zone fencing, but no fewer than four signs with each facing a different direction.
- C. Maintain protection zones free of weeds and trash.
- D. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.
- E. Maintain protection-zone fencing and signage in good condition as acceptable to: Landscape Architect and remove when construction operations are complete and equipment has been removed from the site.
 1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
 2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

- A. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.
- B. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately **3 inches** back from new construction and as required for root pruning.
- C. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 ROOT PRUNING

- A. Prune roots that are affected by temporary and permanent construction. Prune roots as follows:
 - 1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
 - 2. Cut Ends: Do not paint cut root ends.
 - 3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
 - 4. Cover exposed roots with burlap and water regularly.
- B. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

3.6 REGRADING

- A. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

3.7 FIELD QUALITY CONTROL

- A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.8 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.
 - 1. Submit details of proposed root cutting and tree and shrub repairs.
 - 2. Have arborist perform the root cutting, branch pruning, and damage repair of trees and shrubs.
 - 3. Treat damaged trunks, limbs, and roots according to arborist's written instructions.
 - 4. Perform repairs within 24 hours.
 - 5. Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.

- B. Trees: Remove and replace trees indicated to remain that are more than 66 percent dead or in an unhealthy condition or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
 - 1. Provide new trees of same size and species as those being replaced for each tree that measures **6 inches** or smaller in caliper size.
 - 2. Provide two new tree(s) of **4-inch** caliper size for each tree being replaced that measures more than **6 inches** in caliper size.
 - a. Species: Species selected by Landscape Architect.
 - 3. Plant and maintain new trees as specified in Section 329300 "Plants."

3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 015639

SECTION 017700

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 2. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 3. Complete startup and testing of systems and equipment.
 - 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - 5. Advise Owner of changeover in heat and other utilities.
 - 6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 - 7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 8. Complete final cleaning requirements, including touchup painting.

9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Landscape Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Landscape Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Landscape Architect, that must be completed or corrected before certificate will be issued.
 1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
 1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Landscape Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Landscape Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Landscape Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Landscape Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order,.
 - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 - 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Landscape Architect and Construction Manager.
 - d. Name of Contractor.
 - e. Page number.
 - 4. Submit list of incomplete items in the following format:
 - a. PDF electronic file. Landscape Architect will return annotated file.

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Landscape Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive **8-1/2-by-11-inch** paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling

navigation to each item. Provide bookmarked table of contents at beginning of document.

- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - f. Remove labels that are not permanent.

- g. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

SECTION 017823

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Operation manuals for systems, subsystems, and equipment.
 - 3. Product maintenance manuals.
 - 4. Systems and equipment maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Landscape Architect will comment on whether content of operations and maintenance submittals are acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Landscape Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before substantial completion. Landscape Architect will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before final completion. Landscape Architect will return copy with comments.
 1. Correct or revise each manual to comply with Landscape Architect's comments. Submit copies of each corrected manual within 7 days of receipt of Landscape Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
 1. List of documents.
 2. List of systems.
 3. List of equipment.
 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents.

2.2 REQUIREMENTS FOR OPERATION AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Construction Manager.
 - 7. Name and contact information for Landscape Architect.
 - 8. Names and contact information for major consultants to the Landscape Architect that designed the systems contained in the manuals.
 - 9. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.

2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Wiring diagrams.
 6. Control diagrams.
 7. Piped system diagrams.
 8. Precautions against improper use.
 9. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
 - 2. Comply with requirements of newly prepared record Drawings in Section 017839 "Project Record Documents."
- F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
1. Record Drawings.
 2. Record Specifications.
 3. Record Product Data.
 4. Miscellaneous record submittals.
- B. Related Requirements:
1. Section 017700 "Closeout Procedures" for general closeout procedures.
 2. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
1. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit one paper-copy set(s) of marked-up record prints.
 - 2) Landscape Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned record prints and three set(s) of prints.
 - 2) Print each drawing, whether or not changes and additional information were recorded.

- B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding archive photographic documentation.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made following Landscape Architect's written orders.
 - k. Details not on the original Contract Drawings.
 - l. Field records for variable and concealed conditions.

- m. Record information on the Work that is shown only schematically.
 - 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 - 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 - 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
- 1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - 2. Format: Annotated PDF electronic file.
 - 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 - 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Landscape Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
- 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
 - 5. Note related Change Orders, record Product Data, and record Drawings where applicable.

- B. Format: Submit record Specifications as annotated PDF electronic file.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as annotated PDF electronic file.
 - 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file.
 - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Landscape Architect's reference during normal working hours.

January 06, 2017

SECTION 017839-5

DEER PARK NATURE PRESERVE

PROJECT RECORD DOCUMENTS

END OF SECTION 017839

SECTION 321313
CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes exterior cement concrete pavement for the following:
 - 1. Walkways.
- B. Related Sections include the following:
 - 1. Section 321373: "Concrete Paving Joint Sealants"

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
 - 1. Aggregates.
- D. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing compounds.
5. Joint fillers.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Mockups: Cast mockups of full-size sections of concrete pavement to demonstrate typical joints, surface finish, texture, color, and standard of workmanship.
 1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Landscape Architect.
 2. Notify Landscape Architect seven days in advance of dates and times when mockups will be constructed.
 3. Obtain Landscape Architect's approval of mockups before starting construction.
 4. Maintain approved mockups during construction in an undisturbed condition as a standard for judging the completed pavement.
 5. Demolish and remove approved mockups from the site when directed by Landscape Architect.
 6. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 2. Products: Subject to compliance with requirements, provide one of the products specified.
 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
 4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces. Use flexible or curved forms for curves with a radius **100 feet** or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- B. Reinforcing Bars: ASTM A 615/A 615M, **Grade 60**; deformed.
- C. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, **Grade 60**. Cut bars true to length with ends square and free of burrs.
- D. Tie Bars: ASTM A 615/A 615M, **Grade 60**, deformed.
- E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use one of the following cementitious materials, of the same type, brand, and source throughout the Project:
 - 1. Portland Cement: ASTM C 150, Type I, gray.
- B. Normal-Weight Aggregates: ASTM C 33, Class 1N coarse aggregate, uniformly graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: **1 inch** nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M.

- D. Air-Entraining Admixture: ASTM C 260.

2.5 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
 - 1. Compressive Strength (28 Days): 3000 psi.
- C. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.6 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
 - 1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated. Provide tie bars at sides of pavement strips where indicated.
 - 1. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to as per the drawings. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.

- 2. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.
- D. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to as per the drawings. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- C. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- D. Do not add water to concrete during delivery or at Project site.
- E. Do not add water to fresh concrete after testing.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- H. Screed pavement surfaces with a straightedge and strike off.
- I. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- J. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
 1. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.8 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:
 1. Elevation: 1/4 inch.
 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 3. Surface: Gap below 10-foot- long, unlevelled straightedge not to exceed 1/4 inch.
 4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
 5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
 6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches.
 8. Joint Spacing: As per the drawings.
 9. Contraction Joint Depth: Plus 1/4 inch, no minus.

10. Joint Width: Plus **1/8 inch**, no minus.
11. Running slope: No greater than 5% (1:20) slope unless otherwise noted.
12. Cross-slope: No greater than 2% (1:50) slope unless otherwise noted.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 1. Testing Frequency: Obtain at least 1 composite sample for each **100 cu. yd.** or fraction thereof of each concrete mix placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is **40 deg F** and below and when **80 deg F** and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
 - a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than **500 psi**.
- D. Test results shall be reported in writing to Landscape Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Landscape Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Landscape Architect.
- G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.10 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.
- B. Drill test cores, where directed by Landscape Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321373

SECTION 329200

TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Hydroseeding.
 - 2. Sodding.
- B. Related Sections:
 - 1. Section 329300 "Plants"
 - 2. Section 329700 "Landscape Maintenance"

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- C. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- D. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- E. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

- F. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
- G. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- H. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to this Project.

1.5 INFORMATIONAL SUBMITTALS

- A. Certification of Grass Seed: From seed vendor for each grass-seed or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.
- B. Qualification Data: For qualified landscape Installer.
- C. Product Certificates: For soil amendments and fertilizers, from manufacturer.
- D. Material Test Reports: For existing native surface topsoil, imported or manufactured topsoil.
- E. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of turf during a calendar year.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf establishment.
 - 1. Field Supervision: Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 2. Pesticide Applicator: State licensed, commercial.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.
- C. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk materials with appropriate certificates.

1.8 MAINTENANCE SERVICE

- A. Initial Turf Maintenance Service: Begin maintenance immediately after each area is planted and continue until acceptable turf is established.

PART 2 - PRODUCTS**2.1 SEED**

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: State-certified seed of grass species as follows:
- C. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
 - 1. Bermudagrass (*Cynodon dactylon*).

2.2 SOD

- A. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.

- B. Turfgrass Species: Bermudagrass (*Cynodon dactylon*).
- C. Turfgrass Species: Sod of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:

2.3 INORGANIC SOIL AMENDMENTS

- A. Sand: Clean, washed, natural or manufactured, and free of toxic materials.

2.4 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.5 MULCHES

- A. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- B. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

2.6 PESTICIDES

- A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 - 3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Landscape Architect and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. Limit turf subgrade preparation to areas to be planted.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of **1 inches**. Remove stones larger than **1 inch** in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply fertilizer directly to subgrade before loosening.

- C. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 2. Loosen surface soil to a depth of at least **1 inches**. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top of soil.
 3. Remove stones larger than **1 inch** in any dimension and sticks, roots, trash, and other extraneous matter.
 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus **1/2 inch** of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
- E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- F. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
1. Mix slurry with nonasphaltic or fiber-mulch manufacturer's recommended tackifier.
 2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than **1500-lb/acre** dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

3.5 SODDING

- A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across angle of slopes exceeding 1:3.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.6 TURF ESTABLISHMENT

- A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
- B. Watering: Keep turf uniformly moist to a depth of 4 inches.
 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 1. Mow bermudagrass to a height of 1/2 to 1 inch.
- D. Turf Post-fertilization: Apply fertilizer after initial mowing and when grass is dry.
 1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.7 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Landscape Architect:
 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.8 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.9 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- C. Remove non-degradable erosion-control measures after grass establishment period.

END OF SECTION 329200

SECTION 329300**PLANTS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Soil preparation and planting mixes
 - 2. Trees, shrubs, and groundcovers.
 - 3. Planting accessories.
 - 4. Landscape maintenance.
- B. Related Sections include the following:
 - 1. Section 328400: "Planting Irrigation"
 - 2. Section 329200: "Turf and Grasses"
 - 3. Section 328400: "Plant Irrigation"
 - 4. Section 329700 "Landscape Maintenance"

1.3 DEFINITIONS

- A. Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, with standard ball size for type and size of tree or shrub required, wrapped, tied, rigidly supported, and drum-laced, all as recommended by ANSI Z60.1.
- B. Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of exterior plant required.
- C. Finish Grade: Elevation of finished surface of planting soil.
- D. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

- E. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- F. Specimen Plants: Plants having exceptional character, superiority in form and branching habit, and the best attributes of the species, as determined by the Landscape Architect.
- G. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

1.4 SUBMITTALS

- A. General: See Section 013300: "Submittal Procedures".
- B. Product Data: For each product indicated.
- C. Samples for Verification: For each of the following:
 - 1. **1 lb** of each type of topsoil, soil amendment, fertilizer, mulch, weed control barrier, and soil mix in labeled plastic bags.
 - 2. Edging materials and accessories to verify color selected.
- D. Product Certificates: For each type of manufactured product. Provide manufacturer's certified analysis for standard products. Provide analysis of other materials by a recognized laboratory.
- E. Qualification Data: For Landscape Contractor.
- F. Planting Schedule: Indicating anticipated planting dates for exterior plants.
- G. Maintenance Instructions: Recommended procedures for maintenance of exterior plants during calendar year.
- H. As-Built Drawings: Maintain a record "As-Built" copy of the Drawings and Specifications in good order and marked to record changes made.

1.5 QUALITY ASSURANCE

- A. Contractor Qualifications: A qualified landscape contractor whose work has resulted in successful establishment of exterior plants. Contractor to maintain an experienced full-time supervisor on Project site when planting is in progress.
- B. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock." Plant names indicated comply with "Standardized Plant Names", as adopted by the most recent edition of the American Joint committee on Horticultural Nomenclature. Provide plant materials true to botanical name.

- C. Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks in normal position and untied. Do not prune to obtain specified sizes. Take caliper measurements **6 inches** above ground for trees up to **4-inch** caliper size, and **12 inches** above ground for larger sizes.
- D. Observation: Plant materials shall be initially inspected and approved through photographic review. Provide color photographs of representative samples of each species of tree, shrub, and groundcover. Landscape Architect may observe trees and shrubs at nursery or at site to verify compliance with specifications. Landscape Architect retains the right to observe plant materials at site for size and condition, insects, injuries, and defects and to reject unsatisfactory material at any time until Date of Substantial Completion. Rejected plant materials shall be removed immediately from Project site. Notify Landscape Architect of sources of planting materials minimum seven (7) days in advance of delivery to site.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fertilizer and other materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in location to prevent wetting and deterioration.
- B. Deliver plants freshly dug. Do not prune trees and shrubs before delivery, except as approved by Landscape Architect. Protect bark, branches, and root systems from sunscald, drying, sweating, whipping, and other handling and tying damage. Do not bend or tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering during delivery. Handle planting stock by root ball and do not drop during delivery. Deliver plants after preparations for planting have been completed and install immediately. If planting is delayed for more than six hours after delivery, store plants as follows:
 - 1. Store plants in shade, protect from weather and damage, and keep roots moist.
 - 2. Set balled stock on ground and heel in with soil, mulch, or other acceptable material.
 - 3. Do not remove container-grown stock from containers before time of planting.
 - 4. Water roots of plants stored on-site. Water as necessary to maintain moist conditions.

1.7 COORDINATION

- A. Work Notification: Notify Landscape Architect at least seven (7) working days prior to installation of plant materials.
- B. Contact local utility provider to locate and flag all existing utilities before beginning installation.
- C. Planting Restrictions: Coordinate planting periods with delivery of plant materials and with required maintenance periods. All trees shall be cured for a period of no less than six (6) weeks. Contractor shall submit written verification that trees have been properly cured to Landscape Architect prior to shipment to site.

- D. Weather Limitations: Proceed with planting only when weather conditions permit. Notify Landscape Architect in writing if schedule is substantially impacted by inclement weather.
- E. Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns, unless otherwise acceptable to Landscape Architect. When planting trees and shrubs after lawns, protect lawn areas and promptly repair any damage caused by planting operations.

1.8 WARRANTY

- A. Special Warranty: Warrant exterior plants and workmanship, for the warranty period indicated, against defects, poor health, unsatisfactory growth, and death, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.
 - 1. Warranty Period: **One (1) year** from date of Substantial Completion.
 - 2. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period. A limit of one replacement of each plant will be required, except for losses due to failure to comply with requirements.

1.9 PLANT ESTABLISHMENT

- A. Maintain and establish landscaping by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease. Remove and replace dead materials. Maintain mulch areas at a 2 in. depth.

PART 2 - PRODUCTS

2.1 TREE AND SHRUB MATERIALS

- A. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. All plant materials shall be nursery grown under climatic and soil conditions similar to those in the locale of the project site. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sunscald, injuries, abrasions, and disfigurement. Stock furnished shall or exceed minimum sizes indicated. Larger stock may be used, if acceptable to Landscape Architect, at no additional cost to Owner. Retain provided nursery labels on each tree and shrub bearing botanical and common name.

2.2 SHADE AND FLOWERING TREES

- A. Shade Trees: Single-stem trees with straight trunk, rounded well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for types of trees required. Crooked trunks, one-sided crowns, and multiple leaders are not acceptable unless specified or otherwise noted.
- B. Small Upright or Spreading Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1.
- C. Multi-Trunk Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1. Minimum three (3) trunks unless otherwise noted.

2.3 DECIDUOUS SHRUBS

- A. Form and Size: Deciduous shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 for type, shape, and height of shrub.

2.4 CONIFEROUS EVERGREENS

- A. Form and Size: Exceptionally heavy, tightly knit, symmetrically shaped coniferous evergreens, complying with ANSI Z60.1.

2.5 BROADLEAF EVERGREENS

- A. Form and Size: Well-balanced, broadleaf evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1.

2.6 GROUNDCOVER PLANTS

- A. Groundcover: Provide ground cover of species indicated, established and well rooted in pots or similar containers, and complying with ANSI Z60.1.

2.7 MISCELLANEOUS PLANTS

- A. Annuals: Provide healthy, disease-free plants of species and variety shown or listed. Provide plants acclimated to outdoor conditions before delivery.
- B. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown. Provide plants acclimated to outdoor conditions before delivery.

- C. Vines: Provide vines complying with requirements in ANSI Z60.1. Provide field grown or containerized plants, as indicated in drawings, with heavy, well-branched tops, with not less than 3 runners and with a vigorous well-developed root system.

2.8 INORGANIC SOIL AMENDMENTS

- A. Sand: Clean, washed, natural or manufactured, free of toxic materials.

2.9 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings. Organic matter content 50 to 60 percent of dry weight. Compost derived from sewage sludge is not permissible.
- B. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
- C. Manure: Well-rotted, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.10 FERTILIZER

- A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
 - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.11 MULCHES

- A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of:
 - 1. Type: Shredded hardwood.
- B. Compost Mulch: Well-composted, weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; not exceeding 0.5 percent inert contaminants, and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50 to 60 percent of dry weight.

2.12 STAKES AND GUYS

- A. Upright and Guy Stakes: Metal "T" posts, painted dark green, **8' min. length**.
- B. Guy and Staking Wire: No. 10 gauge galvanized stranded steel wire.
- C. Turnbuckles: Galvanized steel turnbuckles, minimum **3 inch** opening, with two **3/8-inch** galvanized eyebolts.
- D. Hose Guard: Two-ply reinforced garden hose, min. **1/2 inch** in diameter, black, cut to lengths as required to protect tree trunks from damage.
- E. Flags: Standard surveyor's plastic flagging tape, white, **6 inches** long.

2.13 MISCELLANEOUS PRODUCTS

- A. The Owner will pay for water used. Contractor to provide necessary hoses and equipment required to maintain and complete the work.

2.14 PLANTING SOIL MIX

- A. Planting Soil Mix: Mix topsoil with the following soil amendments **[and fertilizers]** in the following quantities:
 1. Ratio of Loose Compost (33%) to Native Soil (67%) by Volume: 1:2 ratio.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations. Contractor shall be responsible for contacting utility provider to coordinate utility identification and flagging.

- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out tree and shrub locations. Coordinate placement of plants and irrigation equipment to avoid conflicts. Stake locations, outline areas, and obtain Landscape Architect's acceptance of layout before planting.
- D. Apply anti-desiccant to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during handling, and transportation. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant before moving and again two weeks after planting.

3.3 PLANTING BED ESTABLISHMENT

- A. Excavate planting beds to a depth of **8 inches**. Remove stones larger than **1 inch** in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix as required to produce 6" depth in landscape beds. Delay mixing fertilizer with planting soil if planting will not proceed within a few days. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet. Allow for 2" mulch layer in all beds.
- B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
- C. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.4 TREE AND SHRUB EXCAVATION

- A. Pits and Trenches: Excavate circular pits with vertical sides. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smoothed during excavation. Remove excavated materials from site. Excavate at least **18 inches** larger than diameter of rootball.
- B. Subsoil removed from excavations may be used as backfill.
- C. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
- D. Drainage: Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.

3.5 TREE AND SHRUB PLANTING

- A. Set trees plumb and in center of pit with top of root ball **1 inch** above finish grade.
- B. Remove containers, burlap, or wire baskets from tops of root balls and partially from sides; do not remove from under root balls. Do not use if root ball is cracked or broken.
- C. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Water again after placing final layer of planting soil mix.
- D. Organic Mulching: Apply **2-inch** layer of organic mulch. Do not place mulch against trunks.

3.6 TREE AND SHRUB PRUNING

- A. Prune trees and shrubs per standard horticultural practice. Unless otherwise indicated by Landscape Architect, do not cut tree leaders; remove only injured or dead branches. Prune shrubs to retain natural character. Shrub sizes indicated are sizes after pruning.

3.7 GUYING AND STAKING

- A. Staking and Tying: Stake trees of **2- through 5-inch** caliper. Stake trees less than **2-inch** caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of length required to penetrate at least **18 inches** below bottom of backfilled excavation and to extend at least **72 inches** above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased in hose sections at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
- B. Guying and Staking: Guy and stake trees exceeding **14 feet** in height and more than **3 inches** in caliper, unless otherwise indicated. Securely attach no fewer than 3 anchors installed per manufacturer's recommendations..
 - 1. For trees more than **6 inches** in caliper, attach guys to anchors installed per manufacturer's recommendations. Provide turnbuckles for each guy wire and tighten securely.
 - 2. Attach flags to each guy wire, **30 inches** above finish grade.

3.8 GROUNDCOVER AND SHRUB PLANTING

- A. Space plants in accordance with spacing indicated on plans. Adjust as necessary to fill beds with indicated quantity of plants. Plant to within 12" of trunks of trees and shrubs within bed and to within 6" of edge of bed.

- B. Prepare beds as specified. Dig holes large enough to allow spreading of roots, and backfill with planting soil. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

3.9 PLANTING BED MULCHING

- A. Install weed-control barriers per manufacturer's recommendations. Cover areas to be mulched, overlap edges minimum of **6 inches**.
 - 1. Material and Seam Treatment: [**Nonwoven fabric with seams pinned**] [**Composite fabric with seams pinned**].
- B. Mulch backfilled surfaces of planting beds and other areas as indicated.
 - 1. Organic Mulch: Apply **3-inch** average thickness of organic mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.
 - 2. Mineral Mulch: Apply **3-inch** average thickness of mineral mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.

3.10 CLEANUP AND PROTECTION

- A. During planting operations, keep adjacent pavings and construction clean and work area in an orderly condition on a daily basis. Thoroughly clean any surface marred or stained by installation activities. Protect plants from damage due to landscape operations. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged planting. Remove excess materials, debris, and equipment from site.

3.11 DISPOSAL

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 329300

SECTION 329700**LANDSCAPE MAINTENANCE****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and Division 1 Specification Sections apply to the work specified in this Section.

1.2 SUMMARY

- A. Scope: Provide labor, material, equipment, related services, and supervision required for landscape maintenance as required for the complete performance of the work and as shown on the Drawings and as herein specified.
- B. Section Includes: The work specified in this Section includes, but shall not be limited to, maintenance of irrigation system, landscaping, and turf and grasses for a period of **3 months** from **Date of Substantial Completion**.
- C. Related Sections: The following sections contain requirements that relate to this Section:
 - 1. Section 329200: "Turf and Grasses"
 - 2. Section 329300: "Plants"

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. The edition/revision of the referenced publications shall be the latest date as of the date of the Contract Documents, unless otherwise specified.
- C. National Arborist Association (NAA):
 - 1. NAA PSST, "Pruning Standards for Shade Trees."

1.4 SUBMITTALS

- A. General: See Section 013300: "Submittal Procedures".
- B. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Product data shall include, but shall

not be limited to, product information and application instructions from manufacturer for chemicals, fertilizers, and other products used in the work.

C. Quality Control Submittals:

1. Soil Test Analysis: Provide soil test analysis from [the State Agricultural Extension Service Laboratory] [an approved inspecting and testing agency]. Collect samples from representative areas of the site (minimum of four). Analysis shall include, but shall not be limited to, the following:
 - a. Soil pH (submitted once annually).
 - b. N, P, K, Mg, and Ca levels (submitted once annually).
2. Schedule: Submit a complete maintenance schedule outlining detailed procedures to be performed daily, weekly, monthly, and annually.
3. Certificates: Submit a copy of the current pest control applicator's license as required by law.

1.7 QUALITY ASSURANCE

- A. Qualifications: Firm that shall have a minimum of five years of successful experience with projects providing landscape maintenance similar in type and scope to that required for this Project.
- B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction. Obtain necessary approvals or permits from such authorities.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Protection: Fertilizer and chemicals utilized in the work shall be stored in closed containers and labeled according to contents. Do not dispose of excess chemicals on site. Do not clean equipment on site.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. Fertilizer:
 - 1. Turf: Provide fertilizers with a dry weight percentage 16-4-8 N-P-K analysis. Use a fertilizer with 50 percent of its nitrogen being slow release.
 - 2. Trees, Shrubs, Groundcover, and Flower Beds: Provide slow-release fertilizer. Subject to compliance with requirements, provide the following product (or approved equal):
 - 1) Osmocote 14-14-5; as manufactured by Grace Sierra Co.
- B. Mulch: Provide mulch clean and free from deleterious materials, suitable as a top dressing for trees and shrubs, consisting of one of the following shredded hardwood mulch, free from branches.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Verification of Conditions: Examine areas and conditions under which the work is to be performed, and notify the Contractor in writing, with a copy to the Owner and the Landscape Architect, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory.

3.2 TURF

- A. Insect and Disease Treatment: Inspect for insects and diseases every two weeks during the growing season and monthly during the dormant season. Apply treatment as frequently as required to prevent damage.
- B. Weed Control: Apply pre-emergent control twice a year in early March and early September. Apply post-emergent control during the growing season as required to keep weeds to one per 100 square feet or less. Remove weeds in pavement joints and apply pre-emergent.
- C. Fertilizer: Apply fertilizer in early March for the first application and in early September for the second application, unless otherwise indicated. Apply at the rate of 2.5 pounds of actual nitrogen per 1000 square feet of lawn area. Use a rotary spreader in a criss-cross pattern for even coverage.
- D. Edging: Prior to each mowing, trim lawn edges adjacent to other materials and paved areas. Replace plants damaged by string trimmers or other mechanical lawn edgers. Trim around irrigation heads. Do not damage tree bark with string trimmers.

- E. Mowing: Mow grass as a one-day operation. Mow grass weekly during the growing season and as necessary in the winter. Maintain grass at the following heights:
 - 1. Common Bermuda: 3/4 inch to 1-1/2 inches.
- F. Grass Clippings: Collect and discard grass clippings off-site.
- G. Re-Seeding: Re-seed as necessary to maintain a complete and uniform stand of grass. Refer to Section 329200: "Turf and Grasses" for seed type and seeding rate.
- H. Aeration: Mechanically aerate the lawn in early March and early October. Pulverize and leave the cores on the lawn.

3.3 GROUNDCOVER, SHRUBS, AND FLOWERS

- A. Insect and Disease Treatment: Inspect for insects and diseases every two weeks during the growing season and monthly during the dormant season. Apply treatment as frequently as required to control insects and disease.
- B. Weed Control: Apply pre-emergent weed control to shrub beds twice a year in early March and early September. Remove weeds from shrub beds during the growing season as they appear. Replace plants damaged by improper chemical use.
- C. Fertilizer: Apply fertilizer once during the year between February 1 and April 15. Apply 5 pounds of actual nitrogen per 1000 square feet of bed area.

3.4 TREES

- A. Insect and Disease Treatment: Inspect trees for insects and diseases every two weeks during the growing season and monthly during the dormant season. Apply proper treatment as frequently as required to prevent damage. During January and February apply dormant oil spray if needed to control scale insects.
- B. Fertilizer: Apply fertilizer once during the year between February 1 and April 15. Apply 2 pounds of actual nitrogen per 1000 square feet of canopy spread.
- C. Pruning: Remove suckering shoots sprouting from trees as they occur. Remove dead wood and broken and damaged branches. Cut just to outside of branch bark collar point away from trunk. Do not cut flush to trunks. Pruning shall be in accordance with NAA PSST.
- D. Leaning Trees: Straighten leaning trees and provide/adjust staking and guying as needed for support.

3.5 IRRIGATION SYSTEM

- A. Check the irrigation system at each visit to the site for proper operation of time clock and water distribution. Make corrections to maintain proper watering schedule and water volume. Water areas which are not served by automatic irrigation by other means sufficient to maintain vigorous plant material. Start up system in early spring and shut down and winterize system in late fall.
- B. Water Conservation: Adjust system to address local water conservation ordinances, if applicable, and monitor regularly to confirm that system is operating within requirements. Contractor is responsible for setting irrigation clocks and operating system as required by law.

3.6 MULCH

- A. Apply mulch a minimum of twice a year; maintain a depth of 3 inches.

3.7 SOILS

- A. Collect soil samples from representative areas of the site and have tested once annually. Amend soils, as recommended by soil test analysis, to maintain proper soil pH of 6.0 to 7.0 and nutrient/micro-nutrient levels.

3.8 CLEANING

- A. Landscape Areas: At the end of each scheduled visit clean the area of pruned materials, leaf debris, lawn clippings, and trash. Properly dispose of materials off-site.
- B. Pavement Areas: At the end of each scheduled visit clean paved surfaces by means of sweeping or blowing. Remove debris and trash. Properly dispose of materials off-site.

END OF SECTION 329700

Geotechnical Engineering Report

City of Deer Park Community Park Improvements
SWC of East 13th Street and South Battleground Road

Deer Park, Texas

November 17, 2015

Terracon Project No. 92155368

Prepared for:

RVi

Houston, Texas

Prepared by:

Terracon Consultants, Inc.

Houston, Texas

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

November 17, 2015



RVi

19 Briar Hollow Lane, Suite 145
Houston, Texas 77027

Attn: Ms. Jamie Hendrixson, PLA, LEED AP

Re: Geotechnical Engineering Report
City of Deer Park Community Park Improvements
SWC of East 13th Street and South Battleground Road
Deer Park, Texas
Terracon Project No. 92155368

Dear Ms. Hendrixson:

Terracon Consultants, Inc. (Terracon) is pleased to submit our geotechnical engineering report for the project referenced above in Deer Park, Texas. We trust that this report is responsive to your project needs. Please contact us if you have any questions or if we can be of further assistance.

We appreciate the opportunity to work with you on this project and look forward to providing additional geotechnical engineering and construction materials testing services in the future.

Sincerely,

Terracon Consultants, Inc.

(Texas Firm Registration No.: F-3272)

A handwritten signature in blue ink, appearing to read "Patrick Montgomery".

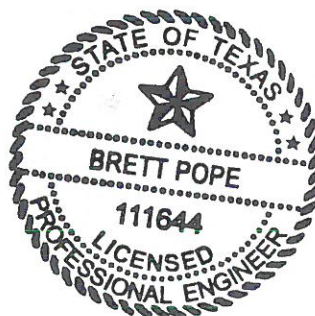
Patrick Montgomery, E.I.T
Staff Geotechnical Engineer

A handwritten signature in blue ink, appearing to read "Brett A. Pope".

Brett A. Pope, P.E.
Project Engineer

A handwritten signature in blue ink, appearing to read "Patrick M. Beecher".

Patrick M. Beecher, P.E.
Geotechnical Services Manager



Enclosures

Copies Submitted: (1) Electronic

Terracon Consultants, Inc. 11555 Clay Road, Suite 100 Houston, TX 77043

P [713] 690 8989 F [713] 690 8787 terracon.com

Geotechnical



Environmental



Construction Materials



Facilities

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APPENDIX A – FIELD EXPLORATION

Exhibit A-1	Site Location Plan
Exhibit A-2	Boring Location Plan
Exhibit A-3	Field Exploration Description
Exhibits A-4 through A-5	Boring Logs

APPENDIX B – LABORATORY TESTING

Exhibit B-1	Laboratory Testing
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APPENDIX C – SUPPORTING DOCUMENTS

Exhibit C-1	General Notes
Exhibit C-2	Unified Soil Classification System

EXECUTIVE SUMMARY

This geotechnical engineering report has been prepared for the proposed construction of improvements to a park in Deer Park, Texas. Two test borings, designated B-1 and B-2, were drilled to a depth of approximately 20 feet in the area of the proposed structures.

Once the site plan is finalized, we should be provided an opportunity to review the final site plan to determine if additional borings are required once the site is cleared. A summary of our findings and recommendations is provided below.

- Groundwater was initially observed at borings B-1 and B-2 at depths that ranged from approximately 12 to 15 feet during dry drilling. After a 15-minute monitoring period, groundwater was observed at borings B-1 and B-2 at depths that ranged from approximately 9½ to 10 feet.
- Fill soils were observed at boring B-1 and extended to a depth of about 2 feet. Support of the foundation elements, slab, flatworks, and pavements on or above undocumented fill soils is discussed in this report. However, even with the recommended construction testing services, an inherent risk exists for the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered.
- A foundation system consisting of drilled straight shafts may be utilized to support the proposed light poles planned at this site.
- A foundation system consisting of shallow spread footings may be utilized to support the proposed boardwalk structure planned at this site.
- We understand that a permeable interlocking concrete pavement system is planned to be used for the parking area.

This summary should be used in conjunction with the entire report for design purposes. Details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled **“5.0 GENERAL COMMENTS”** should be read for an understanding of the report limitations.

GEOTECHNICAL ENGINEERING REPORT
CITY OF DEER PARK COMMUNITY PARK IMPROVEMENTS
SWC OF EAST 13TH STREET AND SOUTH BATTLEGROUND ROAD
DEER PARK, TEXAS

Project No. 92155368

November 17, 2015

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) is pleased to submit our geotechnical engineering report for the proposed construction of improvements to a park in Deer Park, Texas. This project was authorized by Mr. Chris Patterson, ACIP, Vice President for RVI, through signature of RVI's Professional Services Agreement dated October 7, 2015. The project scope was performed in general accordance with Terracon Proposal No. P92151301.Rev2, dated October 1, 2015.

The purpose of this report is to describe the subsurface conditions observed at the two test borings drilled for this project, analyze and evaluate the test data, and provide recommendations with respect to:

- Site and subgrade preparation:
- Foundation design and construction; and
- Pavement design guidelines.

Once the final site plan is prepared, we should be provided an opportunity to review the final site plan to determine if additional borings are required once the site is cleared

2.0 PROJECT INFORMATION

2.1 Project Description

Item	Description
Project location	Southwest corner of the intersection of East 13 th Street and South Battleground Road in Deer Park, Texas. See Appendix A, Exhibit A-1, Site Location Plan.
Site layout	See Appendix A, Exhibit A-2, Boring Location Plan.

Item	Description
<u>Continued from Page 1.</u>	
Proposed improvements	■ Two 15-foot tall light poles supported on drilled, straight-shafts. ■ Boardwalk structure supported on shallow spread footings. ■ A permeable paver pavement system for a parking area about 4 parking spaces in size.

2.2 Site Description

Item	Description
Existing conditions	Vacant site and approximately 15.5 acres of wetlands located to the south of the site.
Current ground cover	Grass, weeds, scattered trees, and underbrush.
Existing topography	Relatively level.

3.0 SUBSURFACE CONDITIONS

3.1 Geology

Based on the geologic maps published by the Bureau of Economic Geology, the site for the proposed construction is located on the Beaumont clay formation, a deltaic nonmarine Pleistocene deposit. The Beaumont clay is a heterogeneous formation containing thick interbedded layers of clay, fine sand and silt.

The coastal plain in this region has a complex tectonic geology, several major features of which are: Gulf Coastal geosyncline, salt domes, and major sea level fluctuations during the glacial stages, subsidence and geologic faulting activities. Most of these geologic faulting activities have ceased for millions of years, but some are still active. A geologic fault investigation and study of the site geology are beyond the scope of this report.

3.2 Typical Profile

The particular subsurface stratigraphy, as evaluated from our field and laboratory programs, is shown in detail on the Boring Logs in Appendix A. Stratification boundaries on the Boring Log

Geotechnical Engineering Report

City of Deer Park Community Park Improvements ■ Deer Park, Texas

November 17, 2015 ■ Terracon Project No. 92155368



represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual.

Fill soils were observed at boring B-1 and extended to a depth of about 2 feet. The underlying native subsurface soil generally consisted of lean clay with sand, fat clay, and silty clay soils that extended to the termination depth of the borings (approximately 20 feet).

The results of our field and laboratory programs can be summarized as follows:

Subsurface Soils					
Description	Plasticity Index	Moisture Content (%)	Moisture Content vs. Plastic Limit ¹	Undrained Shear Strength ² (psf)	Percentage of Fines ³ (%)
Fill: Lean Clay	21	13	-4	4.5 ⁴	---
Lean Clay with Sand and Silty Clay	20 to 28	11 to 22	-4 to 0	600 to 3,200	73
Fat Clay	---	24	---	1,800	---

1. The difference between a soil sample's moisture content and its corresponding plastic limit.

2. Based on unconfined compressive strength tests.

3. Percent passing the No. 200 sieve.

4. Hand penetrometer reading in tons per square foot (tsf).

3.3 Groundwater

Boring B-1 and B-2 were advanced to depths that ranged from about 12 to 15 feet using dry drilling techniques. Wet rotary methods were used thereafter to the termination depth of the borings (about 20 feet) in an effort to evaluate groundwater conditions at the time of the field program. Groundwater was initially observed at borings B-1 and B-2 at depths that ranged from about 12 to 15 feet during dry drilling. After a 15-minute monitoring period, water was observed at borings B-1 and B-2 at depths that ranged from about 9½ to 10 feet.

These groundwater observations are considered short-term, since the borings were open for a short time period. On a long-term basis, groundwater may be present at shallower depths. Additionally, groundwater will fluctuate seasonally with climatic changes and should be evaluated prior to construction.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

The following recommendations are based upon the data obtained in our field and laboratory programs, project information provided to us, and on our experience with similar subsurface and site conditions.

4.1 Geotechnical Considerations

Fill soils were observed at boring B-1 and extended to a depth of about 2 feet. Support of the foundation elements, slab, flatworks, and pavements on or above undocumented fill soils is discussed in this report. However, even with the recommended construction testing services, an inherent risk exists for the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill.

4.2 Earthwork

Construction areas should be stripped of vegetation (including trees), topsoil, and other debris/unsuitable surface material. Roots of trees should be grubbed to full depths. Care should be taken to replace or recompact all soil removed or loosened by removal of tree roots and stumps as recommended in the subsequent paragraphs. Proper site drainage should be maintained during construction so that ponding of surface runoff does not occur and cause construction delays and/or inhibit site access.

Once final subgrade elevations have been achieved, the exposed subgrade should be carefully proofrolled with a 20-ton pneumatic roller or equivalent equipment, such as a fully loaded dump truck, to detect weak zones in the subgrade. Special care should be exercised when proofrolling areas containing fill soils in an attempt to observe soft/weak zones within the fill soils. Weak areas detected during proofrolling, as well as zones of fill containing organic matter and/or debris, should be removed and replaced with soils exhibiting similar classification, moisture content, and density as the adjacent in-situ soils. Proofrolling should be performed under the direct observation of the geotechnical engineer or his/her representative.

Subsequent to proofrolling, and just prior to placement of fill, the exposed subgrade within the construction areas should be evaluated for moisture and density. If the moisture and/or density do not meet the criteria described in the **“4.2.1 Compaction Requirements”** section for on-site soils, the subgrade should be scarified to a minimum depth of 6 inches, moisture conditioned, and compacted to at least 95 percent of the Standard Effort (ASTM D 698) maximum dry density.

On-site soils to be used at this site for grade adjustments should meet the following criteria.

Fill Type	USCS Classification	Acceptable Location for Placement
On-site soils	Varies	The on-site soils, including the undocumented fill soils, appear suitable for use as fill within the pavement areas, provided they are free of organics and debris.

4.2.1 Compaction Requirements

Item	Description
Fill lift thickness	The fill soils should be placed on prepared surfaces in lifts not to exceed 8 inches loose measure, with compacted thickness not to exceed 6 inches.
Compaction requirements	■ On-site soils should be compacted to at least 95 percent of the Standard Effort (ASTM D 698) maximum dry density. ■ The on-site clay soils should be moisture conditioned to between optimum and +4 percent of the optimum moisture content.

Prior to any filling operations, samples of the proposed borrow and on-site materials should be obtained for laboratory moisture-density testing. The tests will provide a basis for evaluation of fill compaction by in-place density testing. A qualified soil technician should perform sufficient in-place density tests during the filling operations to evaluate that proper levels of compaction, including dry unit weight and moisture content, are being attained

4.2.2 Wet Weather/Soft Subgrade Considerations

Construction operations may encounter difficulties due to the wet or soft surface soils becoming a general hindrance to equipment due to rutting and pumping of the soil surface, especially during and soon after periods of wet weather. If the subgrade cannot be adequately compacted to minimum densities as described above, one of the following measures will be required: 1) removal and replacement with select fill, 2) chemical treatment of the soil to dry and improve the condition of the subgrade, or 3) drying by natural means if the schedule allows. In our experience with similar soils in this area, chemical treatment an efficient and effective method to improve the condition of wet and weak subgrade. Terracon should be contacted for additional recommendations if chemical treatment of the soils is needed.

4.2.3 Grading and Drainage

Flatworks and pavements will be subject to post construction movement. Maximum grades practical should be used for paving and flatwork to prevent water from ponding. Allowances in final grades should also consider post-construction movement of flatwork, particularly if such movement would be critical.

4.3 Foundation Systems

Based on the information provided to us, we understand that a foundation system consisting of drilled, straight-shafts is planned to be utilized to support the proposed light poles planned at this site and that a foundation system consisting of shallow spread footings is planned to be utilized to support the proposed boardwalk structure. Based on the subsurface conditions observed during our field and laboratory programs, these types of foundation systems may be utilized to support the proposed structures planned at this site, provided the subgrade is properly prepared as described in this report. Recommendations for these types of foundation systems are provided in the following sections, along with other geotechnical considerations for this project.

4.3.1 Design Recommendations – Shallow Spread Footings

As stated previously, a foundation system consisting of shallow spread footings may be utilized to support the proposed boardwalk planned at this site. Recommendations for shallow spread footings are provided below.

Description	Design Parameters
Minimum embedment depth¹	2 feet below existing grade (grade at the time of our field program)
Allowable bearing pressures (individual footings)²	Net dead plus sustained live load – 2,500 psf Net total load – 4,000 psf
Allowable passive pressure³	750 psf
Allowable frictional resistance⁴	300 psf
Uplift resistance⁵	Foundation Weight (150 pcf) & Soil Weight (120 pcf)

^{1.} The footings should extend through the fill soils and bear upon the native undisturbed soils.

^{2.} Whichever condition yields a larger bearing area.

^{3.} The passive pressure along the exterior face of the footings should be neglected within the upper 3 feet due to surface effects and the presence of fill and expansive soils.

^{4.} To be utilized on the base of the footings.

^{5.} Structural uplift loads on the shallow footings may be resisted by the weight of the foundation plus the weight of any soil directly above the foundation. The ultimate uplift capacity of shallow footings should be reduced by an appropriate factor of safety to compute allowable uplift capacity.

4.3.2 Construction Considerations – Shallow Spread Footings

Excavations for shallow footings should be performed with equipment capable of providing a relatively clean bearing area. The bottom 6 inches of the foundation excavations should be completed with a smooth-mouthed bucket or by hand labor. The excavations should be neatly excavated and properly formed. Debris in the bottom of the excavation should be removed prior to steel placement. Water should not be allowed to accumulate at the bottom of the foundation

excavations. To reduce the potential for groundwater seepage into the excavations and to minimize disturbance to the bearing area, we recommend that concrete and steel be placed as soon as possible after the excavations are completed. Excavations should not be left open overnight. The bearing surface of the shallow footings should be evaluated upon completion of the excavation and immediately prior to placing concrete or a seal slab.

A thin seal slab (approximately 2 to 4 inches thick) should be placed at the bottom of the footing excavation to protect the bearing surface of the footings from disturbance and/or infiltration of ground/surface water if the footing cannot be poured within the same day of its excavation.

4.3.3 Design Recommendations – Drilled, Straight-Shafts

We understand that a foundation system consisting of drilled, straight-shafts is planned to be utilized to support the proposed light poles planned at this site. The drilled straight-shaft foundation planned for the proposed light poles should be designed to resist both horizontal and vertical forces. Horizontal forces can be resisted by the passive pressure of soil acting on the vertical face of the drilled straight-shafts. Vertical downward forces can be resisted by the allowable end bearing pressure of the soils at the bottom of the drilled straight-shafts. Vertical uplift forces can be resisted by the dead weight of the poles and their foundations. When foundation concrete is cast in direct contact with excavation sides, an allowable side friction value can also be used to resist vertical loads.

The allowable design criteria for utilization of drilled straight-shafts as the foundation system for the proposed light poles are presented in the following table. The table includes the effective soil unit weights, the shear strength parameters, allowable end bearing pressure, lateral passive pressure and side friction values. Furthermore, the lateral subgrade modulus values are provided for the cyclic and static loading conditions. Care should be exercised to utilize the appropriate loading condition in the analyses.

The design parameters presented in the following table are applicable for the natural, undisturbed soils. The capacity of the upper 4 feet of the on-site soils should be disregarded due to the presence of fill, expansive soils, and surface effects. Drilled straight-shafts should extend at least 2 feet or half a shaft diameter, whichever is greater, into the desired bearing strata in order to use the recommended allowable end bearing pressures and bear at a depth of at least 10 feet below existing grade. Groundwater was assumed to be below a depth of 10 feet for the design parameters provided below.

Long term settlement of the drilled straight-shaft foundation, designed and constructed in accordance with the recommendations presented in this report, should be about one inch or less.

Drilled, Straight-Shaft Foundation Design Parameters							
Depth Below Existing Grade	Effective Unit Weight	Net Allowable End Bearing Pressure¹	Allowable Side Friction²	Lateral Subgrade Modulus (pci)³		Strain ϵ_{50}	Undrained Shear Strength
(ft)	(pcf)	(psf)	(psf)	cyclic	static	(in/in)	(psf)
0-4	Disregard Capacity						
4-10	130	Disregard	450	600	225	0.006	1,500
10-20	58 ⁴	4,500	450	600	225	0.006	1,500

1. The net allowable end bearing pressure refers to the pressure at the foundation bearing level in excess of the surrounding overburden pressure. A minimum penetration of 2 feet or half a shaft diameter, whichever is greater, into the desired bearing strata should be achieved to use the recommended allowable end bearing pressure.
2. The allowable side friction is based on a rectangular pressure distribution.
3. The lateral subgrade modulus values are provided for static and cyclic loading conditions. The appropriate loading condition should be selected for analysis. In our opinion, the light pole will be subjected to wind loads and should be analyzed using cyclic parameters.
4. Submerged unit weight.

4.3.4 Construction Considerations – Drilled, Straight-Shafts

The drilling contractor should be experienced in the subsurface conditions observed at the site, and the excavation should be performed with equipment capable of providing a clean bearing area. The drilled straight-shaft foundation should be installed in general accordance with the procedures presented in "Drilled Shafts: Construction Procedures and LRFD Design Methods," by Brown, D.A., Turner, J.P., and Castelli, R.J., FHA Publication No. FHWA-NHI-10-016, 2010 and "Standard Specification for the Construction of Drilled Piers", ACI Publication No. 336.1-01, 2001.

The successful completion of the drilled straight-shaft will depend, to a large extent, on the suitability of the equipment and the operator's skills. The operation sequence should be scheduled so that the shaft excavation can be completed, reinforcing steel placed, and the concrete poured in a continuous, rapid, and orderly manner to minimize the time the excavation is open. Concrete should be placed as soon as practical and in all instances should be placed within the same day in order to use the side resistance values presented in the table in the "4.3.3 Design Recommendations – Drilled, Straight-Shaft Foundations" section.

Based on the subsurface conditions observed, the installation of drilled straight-shafts may require the use of the Slurry Displacement Method and/or temporary steel casing. The use of

the Slurry Displacement Method and/or temporary casing may be required below a depth of approximately 10 feet due to the presence of sand seams below this depth. If drilled shaft installation is attempted without utilizing Slurry Displacement Method or temporary casing, zones of sloughing soils and/or groundwater inflow may occur during construction. Therefore, we recommend that provisions be incorporated into the plans and specifications to utilize slurry or casing to control sloughing during shaft construction.

The need for casing or slurry will depend on the depth of the drilled shaft and the groundwater conditions at the time of construction. If casing is used and seepage persists, the water accumulating in the foundation excavation should be pumped out. The condition of the bearing surface should be evaluated immediately prior to placing concrete, if casing is used in lieu of slurry. If groundwater inflow is too severe to be controlled by the use of casing and pumping or significant sloughing of the sidewalls occurs, the slurry method of construction should be utilized to complete the foundation installation.

Where casing is used, removal of the casing should be performed with extreme care and under proper supervision to minimize mixing of the surrounding soil and water with the fresh concrete. Rapid withdrawal of the casing may develop a suction that could cause the soil and water to flow into the excavation. An insufficient head of concrete in the casing during withdrawal could also allow the water to intrude into the wet concrete. Under no circumstances should loose soil be placed in the annulus between the casing and the drilled shaft sidewalls. The casing must be removed in order to utilize the skin friction values previously provided.

During slurry displacement, the foundation excavation is filled with a slurry mixture. The level of slurry should be maintained above the groundwater level to maintain a positive head in the foundation excavation. Therefore, the slurry tends to seep out of the excavation, rather than the groundwater seeping into the open excavation. The slurry must be maintained in the foundation excavation until design termination depth is achieved and should be removed only as concreting proceeds. The properties of the slurry including the density, viscosity, and pH must be carefully controlled and should be in accordance with Item 416 of Texas Department of Transportation (TXDOT) Standard Specifications for Construction of Highways, Streets, and Bridges.

Slurry left in place for long periods of time will build up on the sides of the shaft causing a reduction in skin friction.

The following procedures and equipment are recommended for installation of drilled shafts by the Slurry Displacement Method:

- The bottom of the drilled straight-shaft should be cleaned as well as practical just prior to concreting to remove cuttings.
- The concrete should be placed by means of a tremie with a one-way valve to prevent slurry from entering the pipe. The tremie should extend to the bottom of the drilled shaft to allow displacement of the slurry during concrete placement.

- During concrete placement, the end of the tremie should remain several feet within the concrete mass to reduce the entrapment of slurry. A tremie embedment of 5 to 10 feet is generally considered acceptable.
- The concrete should be relatively fluid to reduce the entrapment of slurry. We recommend that concrete with a slump of 6 to 8 inches be used.
- The upper few feet of concrete should be expunged from the shaft excavation if found to be contaminated with slurry or soil.

A surface casing may be required in addition to the slurry for shaft installation at this site if sloughing of near surface soils occurs. Where casing is used, removal of the casing should be performed with extreme care as previously discussed in this section.

Production shaft installation should be closely monitored by a qualified technician experienced in drilled shaft installation techniques. At a minimum, the technician should monitor shaft excavation, note any unusual installation occurrences, monitor slurry properties and/or casing installation and removal, monitor concrete placement and generally evaluate if shaft installation is being performed in accordance with project specifications.

4.3.5 Foundation Construction Monitoring

The performance of the foundation systems for the proposed structures will be highly dependent upon the quality of construction. Thus, we recommend that subgrade preparation and foundation installation be monitored full time by an experienced Terracon soil technician under the direction of our geotechnical engineer. During foundation installation, the base of the foundations should be observed to evaluate the condition of the subgrade. We would be pleased to develop a plan for compaction and foundation installation monitoring to be incorporated in the overall quality control program.

4.4 Pavements

We understand that a permeable interlocking concrete pavement system will be used for a parking area about 4 parking spaces in size located within 30 feet of the northern light pole. Based on information provided by the Interlocking Concrete Pavement Institute (ICPI), we understand that the pavement system presented in the table below is planned at this site. We understand this system is designed to support about 30,000 ESALs. We recommend that traffic should be limited to low volume, low frequency use by light-duty passenger vehicles. Heavily loaded vehicles should not be allowed to access these pavement areas.

Permeable Interlocking Concrete Pavement System	
Component¹	Material Thickness, Inches
	Parking Lot
Concrete Pavers and Bedding Material	5.0
Base	4.0
Subbase	6.0

¹ Please refer to the ICPI for material specifications for this pavement section.

We recommend that the top 6 inches of the finished subgrade soils directly beneath the pavement system be chemically treated. Chemical treatment will increase the supporting value of the subgrade and decrease the effect of moisture on subgrade soils. This 6 inches of treatment is a required part of the pavement design and is not a part of site and subgrade preparation for wet/soft subgrade conditions.

Presented below are our recommended material requirements for the subgrade.

Lime Treated Subgrade - Pavement subgrade should be treated with lime in accordance with TXDOT 2004 Standard Specifications Item 260. We recommend that approximately 5 to 6 percent lime by dry weight be used for estimating and planning, which is typically equivalent to about 25 to 30 pounds of lime per square yard per 6-inch depth. The actual quantity of lime should be determined at the time of construction based on laboratory testing conducted using bulk samples of the subgrade soils. The pulverization, mixing, and curing of the lime treated subgrade is of particular importance for the on-site clay soils. The subgrade should be compacted to a minimum of 95 percent of the Standard Effort (ASTM D 698) maximum dry density at a moisture content between optimum and 4 percent wet of the optimum moisture content.

Preferably, traffic should be kept off the treated subgrade for about 7 days to facilitate curing of the soil - chemical mixture; in addition, the subgrade is not suitable for heavy construction traffic prior to paving.

Long-term pavement performance will be dependent upon several factors, including maintaining subgrade moisture levels. To help promote long-term pavement performance, the subgrade and the pavement surface should be designed to promote proper surface drainage, preferably at a minimum grade of 2 percent.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

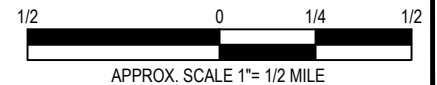
For any excavation construction activities at this site, all Occupational Safety and Health Administration (OSHA) guidelines and directives should be followed by the Contractor during construction to insure a safe working environment. In regards to worker safety, OSHA Safety and Health Standards require the protection of workers from excavation instability in trench situations.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION



SOURCE
2010 HARRIS COUNTY
KEY MAP
Page 539 - J



Project Mng.	PM
Project No.	92155368
Drawn By:	RF
Scale:	AS SHOWN
Checked By:	BP
File No:	92155368
Approved By:	PB
Date:	10/26/2015

Terracon
Consulting Engineers & Scientists

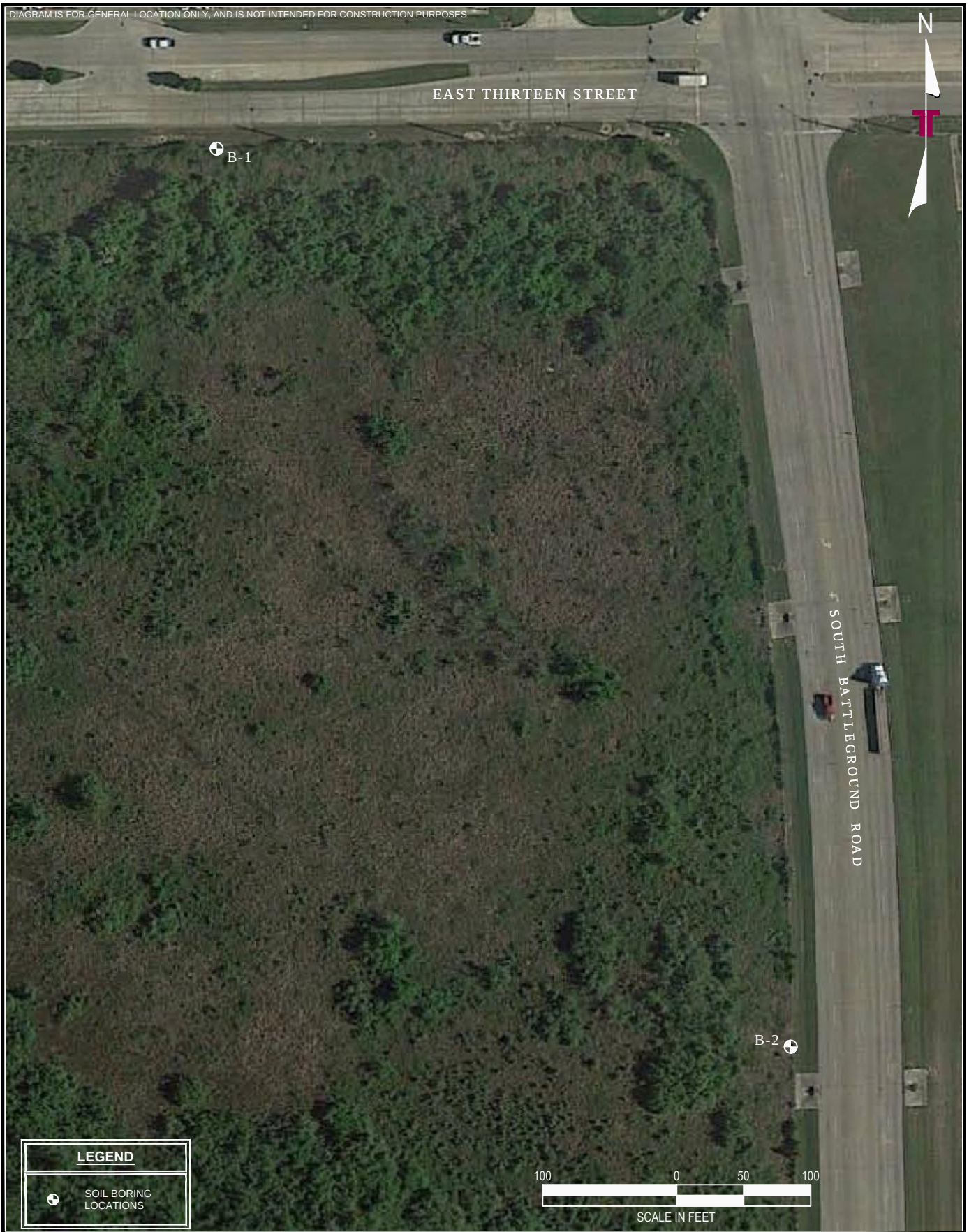
11555 Clay Road Suite 100 Houston, Texas 77043
PH. (713) 690-8989 FAX. (713) 690-8787

SITE LOCATION PLAN
City of Deer Park Community Park Improvements
East 13th and South Battleground Road
Deer Park, Texas

Exhibit

A-1

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES



Project Manager:	PM	Project No.	92155368
Drawn by:	RF	Scale:	AS SHOWN
Checked by:	BP	File Name:	92155368
Approved by:	PB	Date:	10/26/2015

Terracon
Consulting Engineers & Scientists

11555 Clay Road Suite 100 Houston, Texas 77043
PH. (713) 690-8989 FAX. (713) 690-8787

BORING LOCATION PLAN

City of Deer Park Community Park Improvements
East 13th and South Battleground Road
Deer Park, Texas

Exhibit

A-2

Geotechnical Engineering Report

City of Deer Park Community Park Improvements ■ Deer Park, Texas

November 17, 2015 ■ Terracon Project No. 92155368



Field Exploration Description

Subsurface conditions were evaluated by drilling two test borings, designated B-1 and B-2, to a depth of approximately 20 feet in the area of the proposed community park improvements. The boring was drilled using truck-mounted drilling equipment at the approximate locations shown on the Boring Location Plan, Exhibit A-2 of Appendix A. The borings were located by measuring from a hand-held Global Positioning System (GPS) unit with an accuracy of approximately ± 25 feet. Boring depths were measured from existing grade at the time of our field program. Upon completion of our field program, the borings were backfilled with soil cuttings.

The Boring Logs, presenting the subsurface soil descriptions, type of sampling used, and additional field data, are presented on Exhibits A-4 through A-5 of Appendix A. The General Notes, which defines the terms used on the log, are presented on Exhibit C-1 of Appendix C. The Unified Soil Classification System is presented on Exhibit C-2 of Appendix C.

Soil samples were recovered using open-tube samplers. Hand penetrometer tests were performed on samples of cohesive soils to serve as a general measure of consistency.

Samples were removed from samplers in the field, visually classified, and appropriately sealed in sample containers to preserve their in-situ moisture contents. Samples were returned to our laboratory in Houston, Texas.

BORING LOG NO. B-1

Page 1 of 1

PROJECT: City of Deer Park Community Park Improvements

CLIENT: RVI
Houston, Texas

SITE: E. 13th Street and S. Battleground Road
Deer Park, Texas

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 29.7003° Longitude: -95.09485°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)				
	DEPTH											
	FILL - LEAN CLAY (CL) , gray, with calcareous nodules				4.5 (HP)				13		38-17-21	
	2.0											
	LEAN CLAY WITH SAND (CL) , tan and gray, very soft to very stiff, with ferrous stains, sand seams, and calcareous nodules				2.25 (HP)	UC	3.23	8.9	16	114		
		5			1.5 (HP)				16		44-16-28	73
					1.5 (HP)							
	- reddish brown and gray 8 to 10 feet				0.25 (HP)							
	10.0				1.0 (HP)							
	FAT CLAY (CH) , reddish brown and gray, medium stiff to stiff, with silt seams											
		15			1.75 (HP)	UC	1.79	7.1	24	99		
	SILTY CLAY (CL-ML) , reddish brown, medium stiff, with sand seams				0.75 (HP)							
	20.0											
	Boring Terminated at 20 Feet	20										

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Dry augered to 15 feet; wet rotary thereafter.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

WATER LEVEL OBSERVATIONS

- 15 ft While Drilling
- 10.5 ft at 10 Minutes
- 10 ft at 15 Minutes

Terracon
11555 Clay Road, Suite 100
Houston, Texas

Boring Started: 10/16/2015

Boring Completed: 10/16/2015

Drill Rig: Standard Truck

Driller: Herman Drilling

Project No.: 92155368

Exhibit: A-4

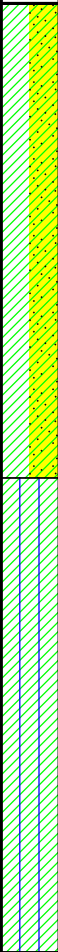
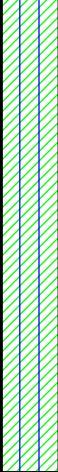
BORING LOG NO. B-2

Page 1 of 1

PROJECT: City of Deer Park Community Park Improvements

CLIENT: RVI
Houston, Texas

SITE: E. 13th Street and S. Battleground Road
Deer Park, Texas

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 29.69845° Longitude: -95.09354°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
						TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)				
DEPTH												
	LEAN CLAY WITH SAND (CL) , gray and tan, medium stiff to very stiff, with sand seams and ferrous stains - with calcareous nodules 2 to 6 feet - reddish brown and gray 8 to 10 feet	5			4.5 (HP)							
					4.5 (HP)				11		35-15-20	
					1.0 (HP)	UC	1.41	12.5	22	107		
					1.0 (HP)							
					0.25 (HP)	UC	0.64	7.8	22	106		
					0.25 (HP)							
					0.75 (HP)							
					0.75 (HP)							
	SILTY CLAY (CL-ML) , reddish brown and gray, very soft to medium stiff, with sand and silt seams	10										
	Boring Terminated at 20 Feet	20										

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Dry augered to 12 feet; wet rotary thereafter.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

WATER LEVEL OBSERVATIONS

-  12 ft While Drilling
-  9.5 ft at 10 Minutes
-  9.5 ft at 15 Minutes

Terracon
11555 Clay Road, Suite 100
Houston, Texas

Boring Started: 10/16/2015

Boring Completed: 10/16/2015

Drill Rig: Standard Truck

Driller: Herman Drilling

Project No.: 92155368

Exhibit: A-5

APPENDIX B
LABORATORY TESTING

Geotechnical Engineering Report

City of Deer Park Community Park Improvements ■ Deer Park, Texas

November 17, 2015 ■ Terracon Project No. 92155368



Laboratory Testing

Soil samples were tested in the laboratory to measure their dry unit weight (ASTM D7263) and natural water content (ASTM D2216). Unconfined compression tests (ASTM D2166) were performed on selected samples and a calibrated hand penetrometer was used to estimate the approximate unconfined compressive strength of some cohesive samples. The calibrated hand penetrometer values have been correlated with unconfined compression tests and provide a better estimate of soil consistency than visual examination alone. Selected samples were also classified using the results of Atterberg Limits (ASTM D4318), and percent passing the No. 200 sieve (ASTM D1140). The test results are provided on the Boring Logs included in Appendix A and in the “**3.2 Typical Profile**” section of this report.

ASTM procedural standards noted above are for reference methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Descriptive classifications of the soils indicated on the boring logs are in general accordance with the enclosed General Notes and the Unified Soil Classification System. Also shown are estimated Unified Soil Classification Symbols. A brief description of this classification system is attached to this report. Classification of the soil samples was generally determined by visual manual procedures.

Samples not tested in the laboratory will be stored for a period of 30 days subsequent to submittal of this report and will be discarded after this period, unless we are notified otherwise.

APPENDIX C
SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING	 Auger Cuttings	 Shelby Tube	WATER LEVEL	 Water Initially Encountered	FIELD TESTS	N Standard Penetration Test Resistance (Blows/Ft.)
	 Standard Penetration Test			 Water Level After a Specified Period of Time		(HP) Hand Penetrometer
				 Water Level After a Specified Period of Time		(T) Torvane
						(DCP) Dynamic Cone Penetrometer
						(PID) Photo-Ionization Detector
						(OVA) Organic Vapor Analyzer

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength Qu, (tsf)	Standard Penetration or N-Value Blows/Ft.
	Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
	Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
	Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
	Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
	Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
			Hard	> 4.00	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A					Soil Classification	
					Group Symbol	Group Name ^B
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	Cu ≥ 4 and 1 ≤ Cc ≤ 3 ^E		GW	Well-graded gravel ^F
			Cu < 4 and/or 1 > Cc > 3 ^E		GP	Poorly graded gravel ^F
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH		GM	Silty gravel ^{F,G, H}
			Fines classify as CL or CH		GC	Clayey gravel ^{F,G,H}
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^E		SW	Well-graded sand ^I
			Cu < 6 and/or 1 > Cc > 3 ^E		SP	Poorly graded sand ^I
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH		SM	Silty sand ^{G,H,I}
			Fines Classify as CL or CH		SC	Clayey sand ^{G,H,I}
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	PI > 7 and plots on or above “A” line ^J		CL	Lean clay ^{K,L,M}
			PI < 4 or plots below “A” line ^J		ML	Silt ^{K,L,M}
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K,L,M,N}
			Liquid limit - not dried			Organic silt ^{K,L,M,O}
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above “A” line		CH	Fat clay ^{K,L,M}
			PI plots below “A” line		MH	Elastic Silt ^{K,L,M}
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid limit - not dried			Organic silt ^{K,L,M,Q}
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

^A Based on the material passing the 3-in. (75-mm) sieve

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$$^E Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

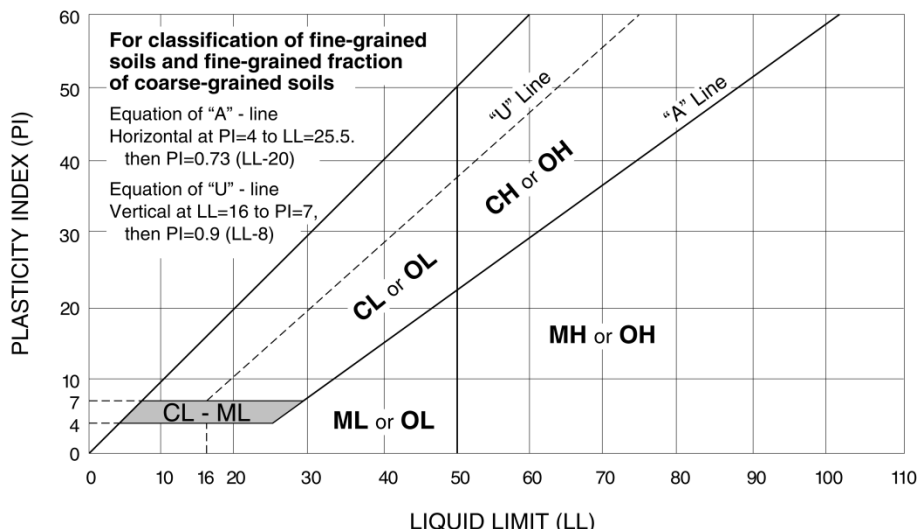
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.





ENVIRONMENTAL CONSULTANTS

Sound Science. Creative Solutions.®

Wetland Restoration Plan for the Deer Park Wetlands Restoration and Public Space Improvements Project Harris County, Texas

Prepared for

The City of Deer Park

Prepared by

SWCA Environmental Consultants

SWCA Project No. 33140

March 2016



**WETLAND RESTORATION PLAN FOR THE DEER PARK
WETLANDS RESTORATION AND PUBLIC SPACE
IMPROVEMENTS PROJECT
HARRIS COUNTY, TEXAS**

Prepared for

The City of Deer Park
610 East San Augustine
Deer Park, Texas 77536

Prepared by

SWCA Environmental Consultants
10245 W. Little York Road, Suite 600
Houston, Texas 77040
www.swca.com

SWCA Project No. 33140

March 2016

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1. INTRODUCTION

The City of Deer Park (Deer Park, City) is planning to develop a 38-acre tract of undeveloped property within the city limits into a park with adjacent wetlands. The property is immediately east of East Boulevard between 13th Street and East X Street in southeast Harris County, Texas. The approximate center of the property is within the U.S. Geological Survey (USGS) La Porte, Texas 7.5-minute quadrangle at latitude 29.697700° north and longitude 95.096200° west (Figure 1, Appendix A). The property is located in the U.S. Environmental Protection Agency's (EPA) Western Gulf Coastal Plain Level III Ecoregion; specifically, it is within the Western Humid Gulf Coastal Prairies Level IV Ecoregion (Omernik 1995). Wetlands within the property have been preserved and enhanced through a mitigation plan for the extension of East Boulevard as permitted through Nationwide Permit 26 under SWG-96-26-011 (permit).

The original mitigation plan (Appendix B) stipulated several requirements. To maintain exchange of water across East Boulevard, the permittee installed four 12-inch culverts under the roadway. Furthermore, stormwater runoff from the road are directed southward through ditches rather than the wetlands. The 17.5 acres of wetlands abutting East Boulevard on the east as well as an adjoining 20 to 50-foot upland buffer were purchased to preserve and protect that area as compensatory mitigation. The mitigation site is protected by deed restriction (Appendix C). Enhancement of the wetlands was completed through a three-year Chinese tallow (*Triadica sebifera*) control program focused on cutting through tallow "within the center of the wetlands" to "maintain open-water habitat for waterfowl use." The fringe of the wetland was to remain forested (including Chinese tallow) to provide a buffer for waterfowl and wildlife use.

Although the mitigation plan requirements have been completed, the wetlands have since become relatively overgrown by Chinese tallow (Terracon 2014, personal observation), causing them not to reflect biological conditions native to the region. Deer Park wishes to restore wetland functions within the property through species management and continuing maintenance activities. Ultimately, Deer Park desires to have the mitigation area serve as a valuable demonstration of the benefits of wetlands. This restoration plan serves to guide the process of restoring wetland functions through removal of invasive species and restoration of native vegetation while meeting the requirements of the U.S. Army Corps of Engineers (USACE).

2. PURPOSE AND OBJECTIVES

This restoration plan provides processes and measures that will be implemented to re-establish appropriate vegetation within the wetlands while meeting the needs of Deer Park. The restoration plan is written in such a way to obviate the need for USACE permitting.

The overall objective of the restoration plan is to restore the vegetation within the wetland to a community composition reflective of forested wetlands native to the ecoregion. This will primarily be completed by removing undesirable non-native species (especially Chinese tallow) and replacing them with more appropriate species as defined through referenced communities for the EPA's Western Gulf Coastal Plain Level III ecoregion. This restoration plan will conform to the requirements of the previously implemented mitigation plan including the protection by deed restriction.

3. EXISTING CONDITIONS

3.1 Physical Conditions

Available topographic maps of the property (USGS 2016) indicate that the property is situated on the coastal prairie in an area of relatively subtle relief (Figure 2, Appendix A). Although the property as a whole appears to be approximately 30 feet above mean sea level (msl), the wetlands obviously form a local depression and act as a sink for local precipitation.

The soil survey of the site (U.S. Department of Agriculture [USDA] 2015) indicates that the wetland area is dominated by Verland (formerly Midland) silty clay loam with minor portions in the Bernard-Edna complex, 0 to 1 percent slopes (Figure 3). Both of these soils are endemic to the coastal plains (USDA 1976). The Bernard-Edna complex is generally dominated by Bernard clay loam with Edna fine sandy loam, making the soils somewhat poorly to poorly drained with very slow permeability. Verland silty clay loam is generally associated with nearly level low coastal uplands and is noted for slow permeability and high runoff rates (USDA 1976). Both soil units are considered to have hydric components within Harris County (USDA 2015).

3.2 Biological Conditions

The property currently consists of largely undeveloped pasture that has become forested through the disruption of the prairie grassfire processes historically maintained the ecoregion. Previously completed field work (Terracon 2014) and anecdotal observations taken through SWCA's protected species assessment indicate that the vegetation communities are generally skewed toward r-selected species that have colonized and/or invaded the site (e.g., hackberry [*Celtis occidentalis*], yaupon [*Ilex vomitoria*], Chickasaw rose [*Rosa bracteata*], and Chinese tallow). The upland portions of the property are dominated by these species in the overstory with herbaceous ground cover. The wetland community is dominated by invasive Chinese tallow subtended by native herbaceous species such as white star sedge (*Rhynchospora colorata*), water smartweed (*Persicaria amphibia*), and knotweed (*Polygonum* spp.).

Based on the mitigation plan approved by the USACE, the proliferation of Chinese tallow is consistent with the invasion biology of the species. Its attractiveness to birds as a food source (Duke 1983) coupled with its ability to produce upwards of 100,000 seeds annually means that the species is readily spread by birds and fluctuating water levels in the damp areas in which it thrives (Jubinsky and Anderson 1996). The approved mitigation plan called for clearing all trees in the central portion of the wetland while leaving a forested fringe. As such, leaving standing tallow within the wetland probably created a perfect scenario for the remainder of the wetland to eventually be overrun by the species. Based on Terracon's (2014) delineation, it appears that the open water areas are less susceptible to tallow invasion with fringe vegetation communities consisting largely of smartweed, woodrush flat sedge (*Cyperus entrerianus*), and poison bean (*Sesbania drummondii*).

4. RESTORATION PROCESS

Re-establishing native forest species within the wetlands will require re-establishment of a tree community typical of the ecoregion. This process will require controlling non-native species; however, to obviate USACE permitting for the project, the property owner must be sure to avoid triggering the need for a Clean Water Act (CWA) permit. The CWA jurisdiction of the wetland is established through its use as a mitigation site for previously impacted waters. Therefore, work done within the wetland must not lead to the discharge of any dredge or fill material including building material, roadways, riprap, mechanical land clearing, or soil placement into on-site wetlands.

4.1 Topography

In accordance with USACE's interpretation of Section 404 of the Clean Water Act, topographic alterations within a water of the United States is considered to include fill, thus requiring a permit. Therefore, no topographic alteration may be performed as part of the clearing or re-vegetation activities. Additionally, all practicable steps should be taken to ensure that construction activities on the adjoining uplands do not lead to siltation or erosion in the wetlands.

4.2 Soils

As a functioning wetland, there is no need to alter soil conditions.

4.3 Vegetation

The current vegetation of the property will be converted to native forested wetland species indicative of the site's topography and geology. The property currently supports scattered trees, with two of the dominant species (Chickasaw rose and Chinese tallow) noted for rapid growth, high fecundity, and high invasion potential and are, therefore, considered undesirable. Restoration efforts will focus on replacing these and other exotic and/or invasive species with those that are considered to be indicative of historic bottomland hardwood forests in the Western Gulf Coastal Plains by SWCA.

4.3.1 Vegetation Removal

Use of mechanized tree removal equipment (e.g., feller-bunchers, harvesters, hydro axe, bulldozer, stump grinder) in forested wetlands generally precipitates a CWA permit from the USACE. Therefore, vegetation removal must only be performed using hand clearing or the application of herbicides. Prior to the initiation of clearing, an on-site kick-off meeting will occur to ensure all involved parties have a similar understanding of the project goals, communication procedures, schedule, leadership, and health and safety controls. Non-target (native) tree/shrub species are important to this site; accordingly, clearing activities must be conducted in a manner that limits damage to non-target species.

Chainsaws, hand saws, and hand loppers will be used for the initial clearing effort. Larger trees along the perimeter of the wetland may require felling by chainsaw, while smaller saplings may be most effectively cleared using loppers. Trees should be cut to within 6 inches of the ground surface. Because Chinese tallow re-sprout prolifically from cut stumps, each must be individually treated at the time of clearing with application of an appropriate herbicide (e.g., triclopyr, glyphosate, or other effective compound). Depending on the efficacy of treating the cut stumps, additional application may be necessary. Leaving trees to die standing may be preferential, especially in areas that provide protection to re-planted areas or areas that have poor accessibility. Typically, this would be achieved by girdling the tree; however, the re-sprouting capability of Chinese tallow makes this ineffective. Therefore, trees left to die standing must be treated using a basal bark (i.e., hack and squirt) herbicide application that involves exposing the cambium before painting it with herbicides.

Harvested material will need to be retrieved from the wetland without disturbing the site's topography. Where possible, these materials can be mulched and dispersed in nearby upland areas beyond the buffer area identified in the mitigation plan. Any mulch will be placed in a manner that minimizes visual or ecological impacts.

Although the wetland system is not extensive, vegetation removal should be performed in a methodical manner with emphasis placed on harvesting or treating all of the Chinese tallow. Chinese tallow matures and reproduces at a young age, so leaving any saplings untreated may create additional ongoing

management problems. Although the wetlands are the particular area of interest, site management should include removal in uplands to reduce seedfall and further simplify management. No planting will occur until all invasive vegetation removal has been completed.

4.3.2 Revegetation

The majority of the wetland to be revegetated consists of ponded/saturated soil throughout the year, especially during the winter months. The hydroperiod of the wetland generally conflicts with the optimum planting season (i.e., winter dormant period). Therefore, planting stock should consist of bare root saplings, which will reduce planting labor and ensure that the plants quickly adapt to saturated soil conditions. The periphery of the wetlands or areas that have dried substantially during the planting season may be planted using one-gallon stock, if needed.

Mature bottomland forests in this ecoregion are typically marked by wide spacing. Depending on the species, stems may be 10 to 20 feet or more from the nearest neighboring canopy tree. For this restoration effort, plantings should be spaced no greater than approximately 15 feet apart to allow for natural mortality and competition among the canopy species. Native, desirable species that remain following clearing activities should be incorporated into the revegetation efforts. Shrubs and trees will be planted by hand no further than 7 feet from other planted or existing woody plants. The target woody species proposed for re-planting efforts in Table 1 are based on the opinions of local experts and published reports (Smeins et al. 1992). Second priority species will be planted if the availability of first priority species is limited.

Table 1. Woody species to be planted within the Deer Park Wetland Restoration Site.

Common Name	Species Name	Growth Form	Priority
Green ash	<i>Fraxinus pennsylvanica</i>	Tree	First
Willow oak	<i>Quercus phellos</i>	Tree	First
Water oak	<i>Quercus nigra</i>	Tree	First
American elm	<i>Ulmus americana</i>	Tree	First
Cedar elm	<i>Ulmus crassifolia</i>	Tree	First
Bald cypress	<i>Taxodium distichum</i>	Tree	First
Sugarberry	<i>Celtis laevigata</i>	Tree	First
Sweetgum	<i>Liquidambar styraciflua</i>	Tree	Second
Water tupelo	<i>Nyssa aquatica</i>	Tree	Second
Water hickory	<i>Carya aquatica</i>	Tree	Second
Overcup oak	<i>Quercus lyrata</i>	Tree	Second
Dwarf palmetto	<i>Sabal minor</i>	Shrub	First
Buttonbush	<i>Cephalanthus occidentalis</i>	Shrub	First
Sweet pepperbush	<i>Clethra alnifolia</i>	Shrub	First

With the number of plants that will be required, it is likely that multiple nurseries will be needed to source these species. To the extent practicable, genotypes as local to the project site as possible will be used. Restoration efforts will also take measures to promote natural volunteer growth and protection of native volunteer populations. Surrogate plant species may be added to Table 1 if these are not available. If surrogate species are used, they will be selected from the list of recommended plants for the appropriate habitat type provided in the Texas Parks and Wildlife Department (TPWD) Plant Information database.

Following the planting of woody species, herbaceous plant restoration will occur (Table 2). Herbaceous planting will target wetter areas within the wetland and will include native species such as soft rush (*Juncus effusus*) and Cherokee sedge (*Carex cherokeensis*). Herbaceous cover will be re-established using live plug and seed sources, as available and appropriate. When used, seed will be mixed in an appropriate carrier material (e.g., coarse sand, saw dust, vermiculite) based on seed size and the seed supplier's recommendations. Once seeded, the seeds will be raked into the natural forest floor duff.

Table 2. Herbaceous wetland species selected for planting.

Scientific Name	Common Name	Indicator Status
<i>Anthaenanthia rufa</i>	purple silkyscale	FACW
<i>Aristida purpurascens</i>	arrowfeather threeawn	FACW
<i>Carex cherokeensis</i>	Cherokee sedge	FACW
<i>Carex microdonta</i>	littletooth sedge	FACW
<i>Cyperus virens</i>	green flatsedge	FACW
<i>Dichanthelium scoparium</i>	velvet panicum	FACW
<i>Eleocharis montevidensis</i>	sand spike-rush	FACW
<i>Helianthus angustifolius</i>	swamp sunflower	FACW
<i>Hypoxis hirsute</i>	common goldstar	FACW
<i>Liatris acidota</i>	sharp blazing star	FACW
<i>Lobelia puberula</i>	downy lobelia	FACW
<i>Juncus brachycarpus</i>	white-root rush	FACW
<i>Juncus diffusissimus</i>	slimpod rush	FACW
<i>Juncus effusus</i>	soft rush	OBL
<i>Juncus marginatus</i>	grassleaf rush	FACW
<i>Panicum bergii</i>	Berg's panicgrass	FACW
<i>Panicum tenerum</i>	bluejoint panicgrass	FACW
<i>Paspalum floridanum</i>	Florida paspalum	FACW
<i>Physostegia intermedia</i>	slender false dragonhead	FACW
<i>Pycnanthemum tenuifolium</i>	narrowleaf mountainmint	FACW
<i>Rhynchospora colorata</i>	white top sedge	FACW
<i>Rhynchospora globularis</i>	Globe beaksedge	FACW
<i>Vernonia missurica</i>	Missouri ironweed	FACW
<i>Ceratophyllum demersum</i>	coon's-tail	OBL
<i>Eleocharis quadrangulata</i>	square-stem spike-rush	OBL
<i>Hydrolea ovata</i>	ovate false fiddleleaf	OBL
<i>Hymenocallis lirioides</i>	spider lily	OBL
<i>Hyptis alata</i>	clustered bushmint	OBL
<i>Iris brevicaulis</i>	zigzag iris	OBL
<i>Juncus acuminatus</i>	tapertip rush	OBL
<i>Juncus effusus</i>	lamp rush	OBL
<i>Lemna minor</i>	common duckweed	OBL
<i>Ludwigia glandulosa</i>	cylindricfruit primrose-willow	OBL
<i>Ludwigia palustris</i>	marsh seedbox	OBL

Scientific Name	Common Name	Indicator Status
<i>Ludwigia peploides</i>	floating seedbox	OBL
<i>Lythrum alatum</i>	winged lythrum	OBL
<i>Rhynchospora corniculata</i>	short-bristle beakrush	OBL
<i>Panicum hemitomon</i>	maiden-cane	OBL
<i>Paspalidium geminatum</i>	Egyptian panicgrass	OBL
<i>Persicaria hydropiperoides</i>	swamp smartweed	OBL
<i>Pontederia cordata</i>	pickerelweed	OBL
<i>Sagittaria graminea</i>	grassleaf arrowhead	OBL
<i>Sagittaria platyphylla</i>	delta arrowhead	OBL
<i>Thalia dealbata</i>	powdery thalia	OBL
<i>Tridens strictus</i>	Longspike tridens	FACW

If planting mortality necessitates replanting, species selected will be taken from the list of recommended plants for the appropriate habitat type provided in the TPWD Plant Information database. Planting will be allowed to occur within a quadrant once the initial clearing of the invasive vegetation has been completed but after one full growing season and secondary herbicide application.

5. RESTORATION RESTRICTIONS

The use of the wetlands as a mitigation site for permit SWG-96-26-011 creates restrictions that must be maintained to ensure that mitigation functions are maintained perpetually. These restrictions are in two forms: 1) requirements of the mitigation plan, and 2) requirements of the deed restriction. These are further enumerated below.

5.1 Mitigation Plan Restrictions

The mitigation plan for the permit (Appendix B) stipulates several requirements. Firstly, the mitigation plan requires the permittee to “enhance the 17.5 acres of wetlands east of the proposed [right of way] to mitigate the filling of 1.73 acres of wetland.” In addition, an upland buffer “greater than 20 feet but not to exceed 50 feet” is to be maintained around the wetlands in total. Therefore, the size of the delineated wetland features must remain at least 17.5 acres and a 20 to 50-foot buffer must also be kept intact adjacent to and contiguous with the wetland.

Under the mitigation plan, a three-year Chinese tallow program was implemented. Under this plan, Chinese tallow trees located in the center of the wetland were to be cut down to maintain open water habitat for wildlife use. However, the trees on the periphery of the wetland, including Chinese tallow, were to be left standing as a wetland buffer to prevent disturbance to wildlife. Although this plan provided open habitat, it also resulted in the wetlands subsequently becoming overrun by Chinese tallow. Fortunately, the three-year program has long since expired.

5.2 Conservation Easement Restrictions

As part of executing SWG-96-26-011, the permittee was required to place a restrictive conservation on the mitigation site (Appendix C). The instrument implementing this easement was signed by Mayor Wayne Riddle on December 16, 2003. This document codifies the uses that are and are not allowed for the property.

Section B of the easement provides several limitations and requirements that may influence restoration of the property. The mitigation area defined in the easement measures 15.4956 acres and is defined in an attached parcel survey. This area appears to conflict with the area defined in the permit. B4 requires that the use of the easement area must be consistent with the permit. This is further defined as ensuring that “wetlands in the mitigation areas are not developed or destroyed.” Although broad, this requires that the purpose of the mitigation site must be maintained. B6 provides that the USACE may inspect the easement area periodically and will have the sole responsibility to enforce the easement.

6. MAINTENANCE AND MANAGEMENT

6.1 Resource Management

The mitigation plan requires the maintenance of several wetland parameters. In particular, the wetland’s acreage, upland buffer, and interior open water habitat should be maintained. Deer Park must manage the adjacent park and drainage systems to ensure that the existing hydroperiod is maintained and siltation does not convert the wetland into upland. Additionally, some open water habitat will have to be maintained within the wetland. Assuming that sediment accretion is not a significant problem in the future, the deeper portions of the wetland should continue to provide open water habitat. Deer Park should monitor this regularly to ensure that all habitat types persist.

6.2 Vegetation Management

Following completion of planting efforts, ongoing management activities will be required to prevent Chinese tallow from re-establishing throughout the property. To maintain a community devoid of invasive species, Deer Park should target species defined in 4 Texas Administrative Code (TAC) §19.300 (Texas Department of Agriculture [TDA] 2007) as well as other species of concern if they are detected within the site.

Deer Park may employ biological, manual, physical, and/or chemical control methods based on the best management practices for the target species in consideration. Integrating these approaches will help control invasive species, prevent ecological damage within the site, and decrease incidental export of these species to neighboring sites. Regardless of the techniques employed, the focus will be to use the least invasive option available that will effectively achieve the management objectives specified and preclude additional USACE permitting for the property. Manual removal techniques (the use of hands or hand tools) is an effective way of removing some unwanted species while exerting minimal impact on neighboring vegetation. Due to the cost of labor, manual removal is often cost-prohibitive at large scales but may serve as an effective spot treatment.

Because Chinese tallow may reach sexual maturity as early as 3 years following germination (Duke 1983), a methodical tallow survey must be performed at least every 2 years to detect and treat any identified tallow plants. Additionally, the survey should assess the survival of the planted saplings and determine the need for supplemental planting efforts.

6.3 Wildlife Management

The site is expected to function as a natural wetland area and, as such, it will be attractive to a wide range of organisms. Therefore, it is expected that the site will provide habitat for a community of animals in addition to plants, fungi, and microorganisms. The animals within a community provide numerous intrinsic benefits including nutrient cycling, seed dispersal, and pollination. However, the interaction of animal and plant communities can be fragile and may be sensitive at various seral and phenological

stages. As such, wildlife management strategies may be necessary to ensure the long-term ecological function of the wetland.

Overgrazing and overbrowsing of vegetation can lead to stunting of growth, girdling, and direct consumption of trees by wildlife. This, in turn, degrades the vegetative community and may reduce biodiversity through uneven feeding pressure. Large and small scale landcover conversion may also be caused by wildlife (beavers and feral hogs, respectively) in wetland areas. Abnormally high animal population densities, even if only for a brief period, may also cause lasting impacts on aquatic systems (Unckless and Makarewicz 2007). Significant wildlife impacts on the site must be documented as part of the routine monitoring activities. If the wetland experiences significant negative effects, Deer Park will need to take actions to control any detrimental impacts while abiding by the intent of the mitigation plan. Management actions may include installing fences, using deterrents, live trapping, and/or harvesting to prevent the undesirable wildlife activity.

7. REPORTING PROTOCOLS

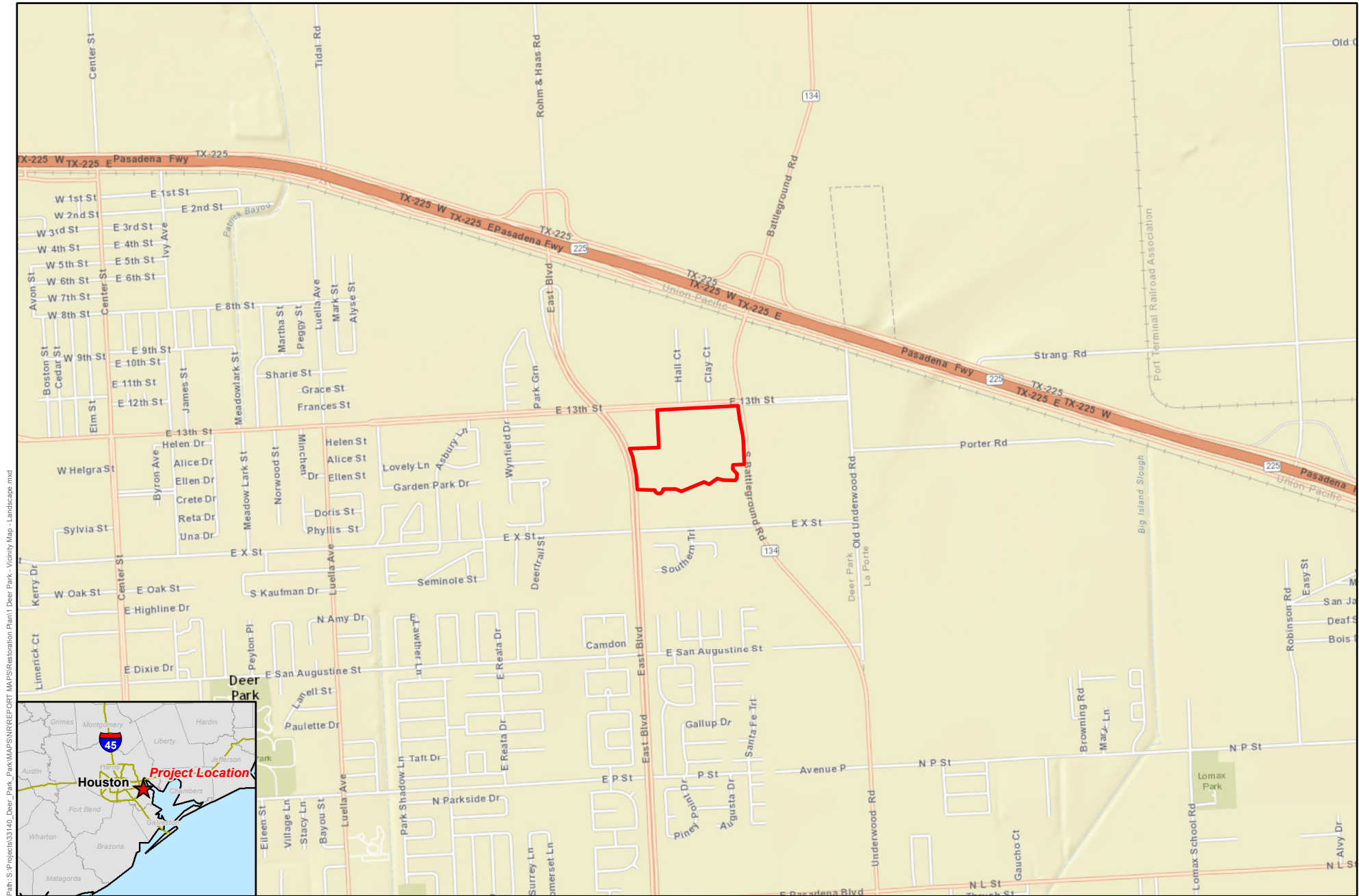
Considering that all stipulated requirements of the mitigation plan have been implemented and completed, there is no need to provide USACE any reports documenting the efficacy of restoration activities. However, Deer Park may ultimately benefit from a record of restoration efforts and their efficacy.

8. REFERENCES

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APPENDIX A

Figures



Path: S:\Projects\13140_Deer_Park\Map\SWCA\REPORT MAPS\Resoration Plan\Deer Park_Vicinity Map - Landscape.mxd



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**CITY OF DEER PARK
WETLANDS RESORATION &
PUBLIC SPACE IMPROVEMENTS
VICINITY MAP
HARRIS COUNTY, TEXAS**

FIGURE 1



Project Boundary

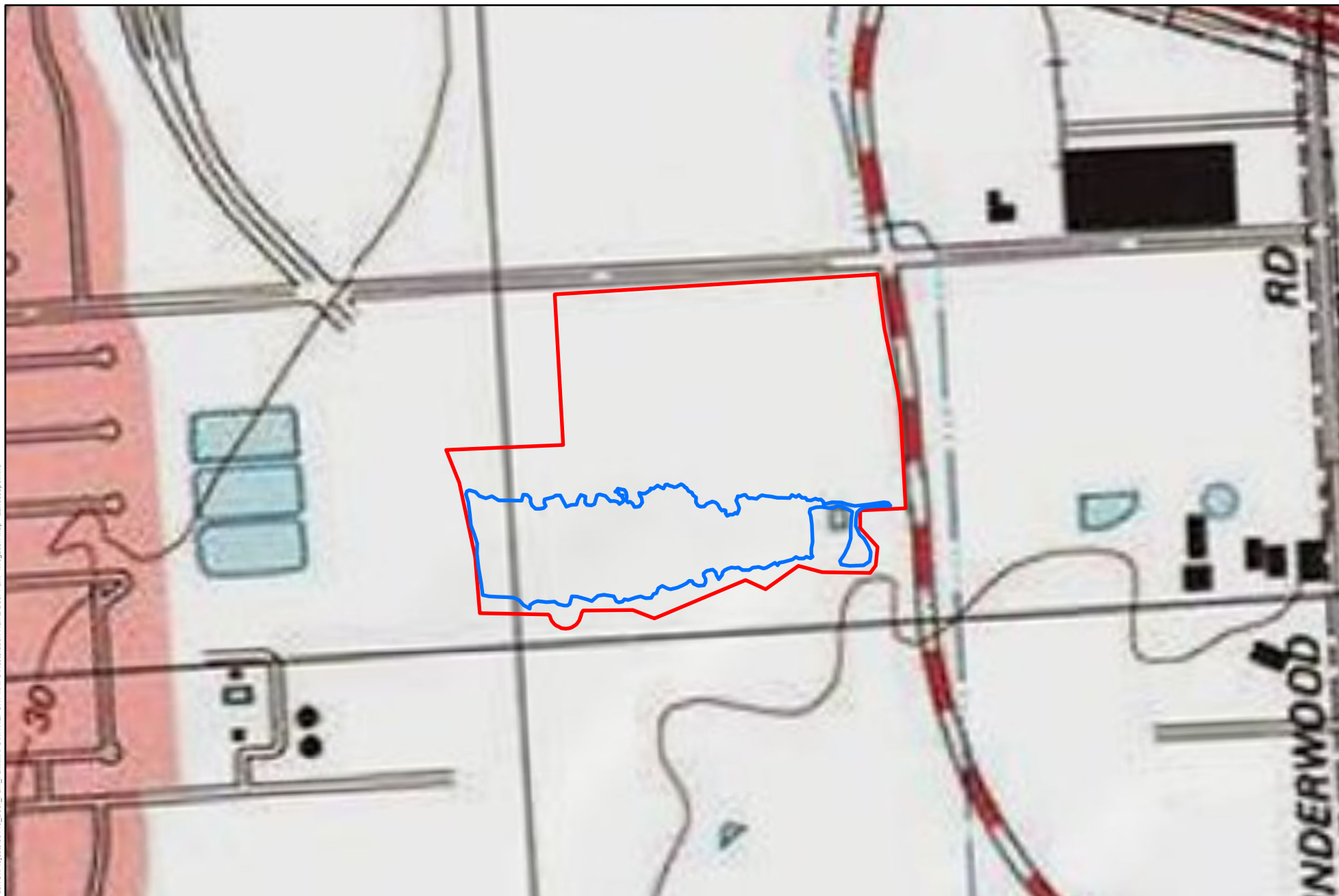


Background:	ESRI World Topographic
Scale:	1:24,000
Created By:	CK
Approved By:	RH
SWCA Project No.:	33140
Date Produced:	March 18, 2016

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

0 1,000 2,000 3,000 Feet

0 300 600 900 Meters



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**CITY OF DEER PARK
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PUBLIC SPACE IMPROVEMENTS**

MITIGATION AREA MAP
HARRIS COUNTY, TEXAS

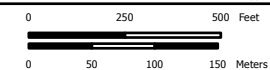
FIGURE 2

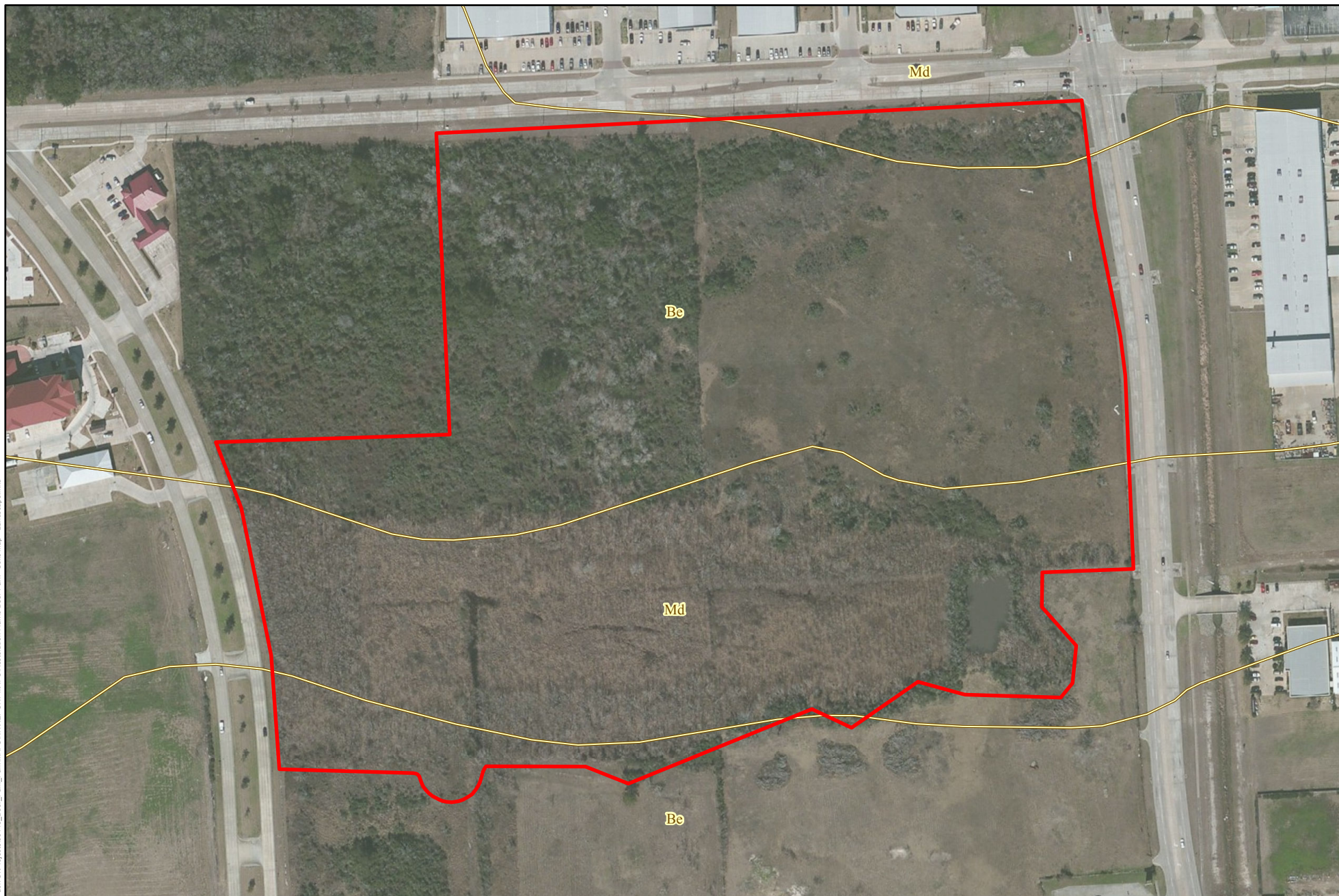
 Project Boundary
 Surveyed Wetland



Background:	USGS Topographic Map
Scale:	1:6,000
Created By:	CK
Approved By:	RH
SWCA Project No.:	22254
Date Produced:	March 18, 2016

NAD 1983 Texas Statewide Mapping System





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**CITY OF DEER PARK
WETLANDS RESORATION &
PUBLIC SPACE IMPROVEMENTS**
SOILS MAP
HARRIS COUNTY, TEXAS

FIGURE 3

- Project Boundary
- Soil Map Unit Boundary



Background:	ESRI World Imagery
Scale:	1:3,000
Created By:	CK
Approved By:	RH
SWCA Project No.:	22254
Date Produced:	March 18, 2016

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

0 125 250 Feet

0 25 50 75 Meters

APPENDIX B

SWG-96-26-011 Mitigation Plan

Attachment B

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1229
GALVESTON, TEXAS 77553-1229

REPLY TO
ATTENTION OF

July 18, 1996

Evaluation Section

SUBJECT: SWG-96-26-011

B/102 /0993/001

Anderson
Freeman
Castille
Smiley
Garrett
Ko
Pepas

7/24/96

Mr. Terry Anderson
Harris County, Engineering Department
1001 Preston, 7th Floor
Houston, Texas 77002

Dear Mr. Anderson:

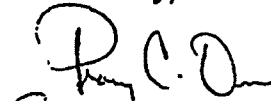
This is in response to your March 28, 1996, application notifying the Galveston District of your intent to fill 1.93 acres of isolated wetlands. The project site is located south of State Highway 225, between Luella and Underwood Roads, in Deer Park, Harris County, Texas.

Your letter resulted in the initiation of the pre-discharge notification procedure specified for Nationwide Permit 26. You were notified by telephone on July 18, 1996, that the District Engineer has determined that the work is authorized under Nationwide 26 provided all proposed mitigative features of the plans are performed. This includes the preservation and enhancement of wetlands. This verification is contingent upon compliance with the following special conditions:

1. The permittee shall conduct an infiltration test upon completion of the construction of the road. If leaks in the storm drains are found they will be plugged to prevent drainage of the wetlands.
2. The road bed or coffer dams will be constructed prior to excavation of the trench for the storm sewer.

Please let us know when you complete your project by returning the enclosed pre-addressed postcard. If you have any questions concerning this matter, please contact Mona G. Coleman at the letterhead address or by telephone at 409-766-3936.

Sincerely,



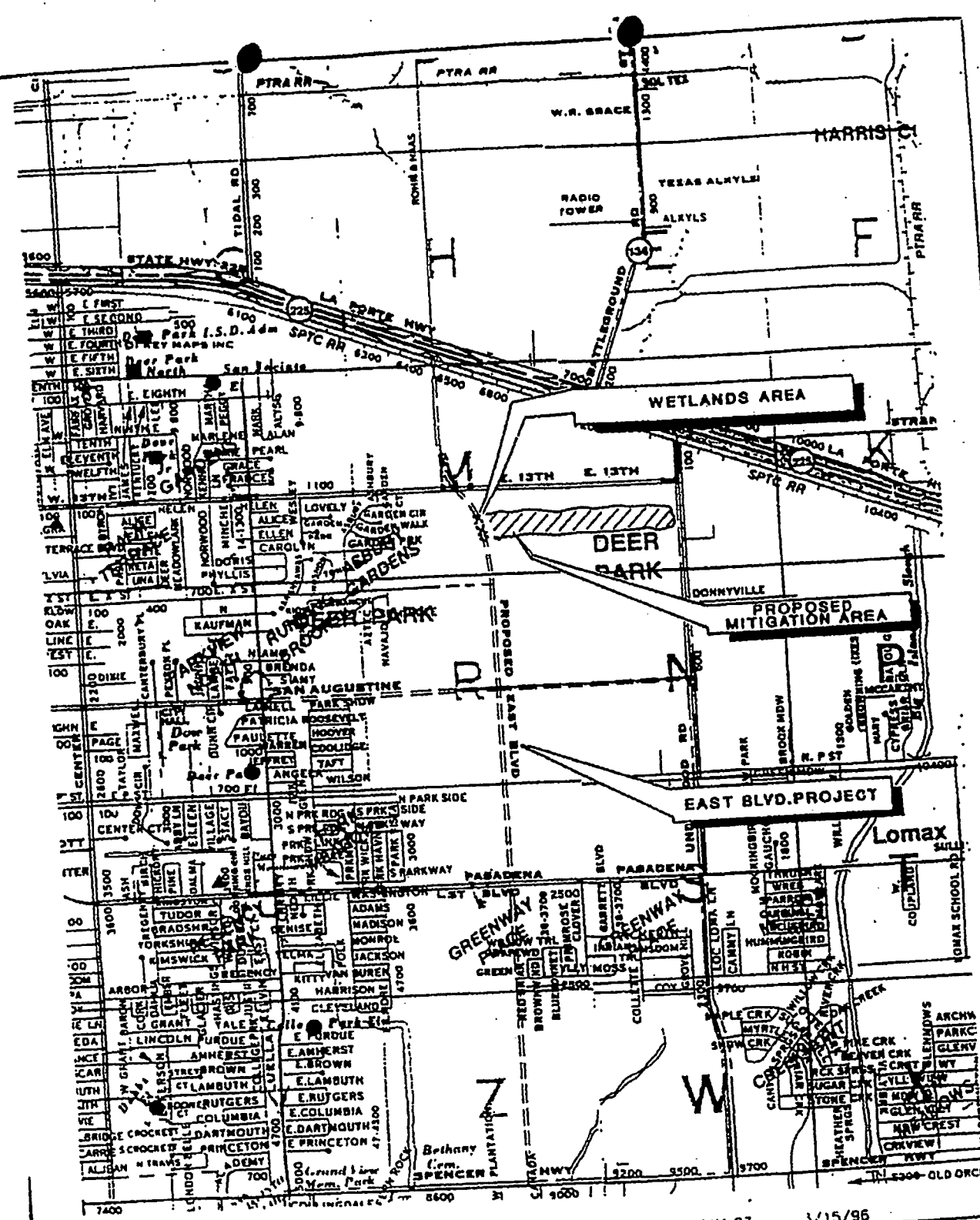
Bruce H. Bennett
Leader, North Evaluation Unit

Enclosure

Copy Furnished:

Dennis Palafox
RMT/Jones and Neuse, Inc.
912 Capital of Texas Highway South, Suite 200
Austin, Texas 78746

15470101.DWG/5 (1-1)

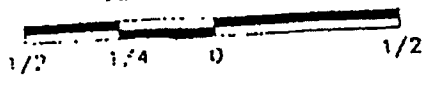


SOURCE: KEY MAP, INC.
PAGES 538 & 539

LEGEND

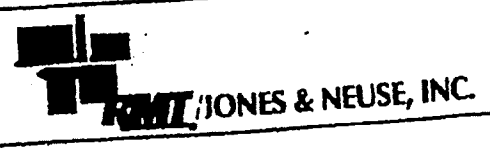
- WETLANDS AREA
- PROPOSED MITIGATION AREA

SCALE IN MILES



50-0154/01.03 3/15/96

FIGURE 1 of 3
SITE VICINITY MAP
HARRIS COUNTY-EAST BLVD. PROJECT
DEER PARK, TEXAS



LEGEND SHEET 2

CITY OF DEER PARK WATER TREATMENT PLANT

DIOCESE OF GALVESTON-
HOUSTON ROMAN CATHOLIC CHURCH

CITY OF DEER PARK

X STREET (80' R.O.W.)

PROPOSED EAST BOULEVARD

W.R. COFFEY

DOUGLAS C. HILL
KELLY L. HILL
JUNE L. HILL
NICKLAS R. HILL

PLOT 3A

PLOT 3B

PLOT 3D

PLOT 3C

3/12/96

JN 50-01547.01-003

FIGURE 3 OF 3

WETLANDS DELINEATION AND
ADJACENT PROPERTY OWNERS
HARRIS COUNTY - EAST BLVD. PROJECT
DEER PARK, TEXAS

JONES & NEUSE



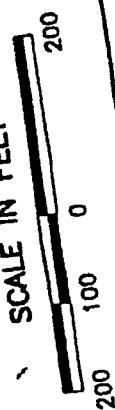
GULF COAST REGION OF

1 of 3

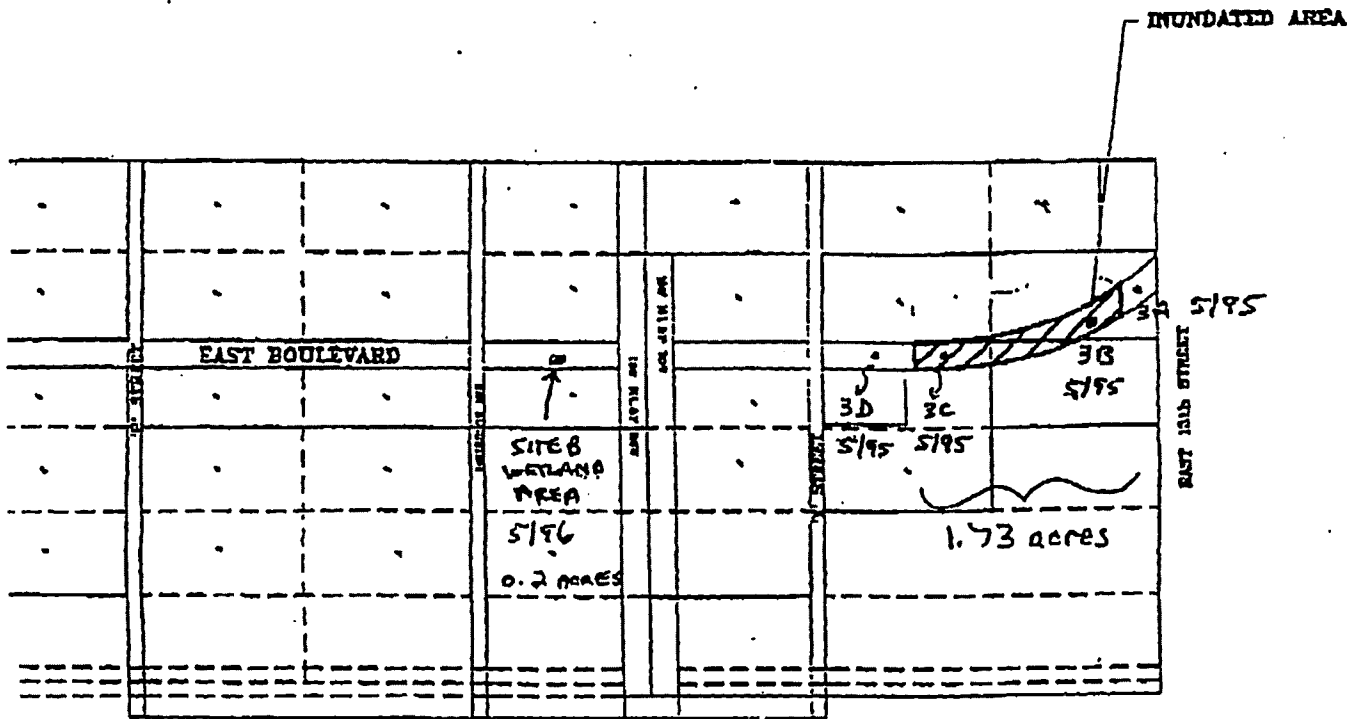
PROPOSED FILLED WETLANDS



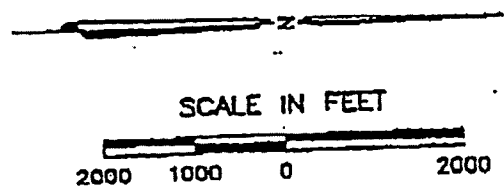
SCALE IN FEET







112-02-00



JN 03154701.1

05-17-94

FIGURE 2 SITE FEATURES MAP

WETLANDS EVALUATION EAST BOULEVARD
J.A. COSTANZA & ASSOCIATES, INC.
HARRIS COUNTY, TEXAS

JN JONES AND NEUSE, INC.
Environmental and Engineering Services



EAST BOULEVARD (150' R.O.W.)

WETLANDS —
DELINEATION

— BUFFER ZONE

S. BATTLEGROUND ROAD

**PROPOSED EAST BLVD. MITIGATION PLAN
DEER PARK, TEXAS
HARRIS COUNTY ENGINEERING DEPARTMENT**

Project Description

The Harris County Engineering Department proposes to construct an extension of East Boulevard from Spencer Road to East 13th Street in Deer Park, Texas. The proposed extension is 2.7 miles long with a 150-ft. right-of-way (ROW). Approximately 1.73 acres of a 23-acre shallow pond with associated emergent wetlands located at the northern end of the proposed roadway will be filled as a result of this project.

Wetlands Description

Dominant vegetation within the pond includes Chinese tallow (*Sapium sebiferum*), common duckweed (*Lemna minor*), swamp smartweed (*Polygonum hydropiperoides*), spiderlily (*Hymenocallis caroliniana*), and whorled bladderwort (*Utricularia radiata*). Dominant vegetation in the emergent wetlands included Chinese tallow, rattiebush (*Sesbania drummondii*), squarestem spikerush (*Eleocharis quadrangulata*), grassy arrowhead (*Sagittaria graminea*), and leafy pondweed (*Potamogeton foliosus*). The wetlands are located in a depression that is approximately two feet below grade at its deepest point.

Proposed Mitigation Plan

The proposed roadway will bisect the wetlands area, filling 1.73 acres and leaving 3.74 acres west of the roadway and approximately 17.5 acres east of the roadway. Four, 12-inch culverts will be placed within the roadway to facilitate water exchange between the remaining wetlands on either side of the road. Additionally, stormwater runoff from the road will be directed to a flood control ditch located to the south of the wetlands.

The Harris County Engineering Department and the City of Deer Park propose to preserve and enhance the 17.5 acres of wetlands east of the proposed ROW to mitigate the filling of 1.73 acres of wetlands. The City of Deer Park proposes to purchase the wetlands from current landowners along with an adjacent and contiguous buffer of uplands greater than 20 feet but not to exceed 50 feet. The mitigation area will be protected by a deed-restricted conservation easement or some comparable method to ensure that wetlands in the mitigation area are not developed or destroyed.

Wetlands will be enhanced by a three-year Chinese tallow control program. Chinese tallows within the center of the wetlands will be cut to maintain open-water habitat for waterfowl use. Chinese tallow and other trees around the periphery of the wetlands will not be cut to provide an additional buffer to minimize disturbance of waterfowl and wildlife using the

wetlands. Maintenance activities will be conducted during the summer when the wetlands are the driest. Annual progress reports will be submitted to the Corps documenting the results of the Chinese tallow control program.

ORDINANCE NO. 2543

AN ORDINANCE DETERMINING THAT A PUBLIC NECESSITY AND USE EXISTS FOR THE ACQUISITION OF CERTAIN PROPERTY; AUTHORIZING THE CITY ATTORNEY TO FILE CONDEMNATION PROCEEDINGS; AND DECLARING AN EMERGENCY.

WHEREAS, the City Council of the City of Deer Park, Texas has entered into an agreement with Harris County for the construction of East Boulevard from Spencer Highway to East 13th Street in the City of Deer Park, Texas to provide a street for its citizens and the public; and

WHEREAS, engineering surveys determined that a portion of the street, along with adjoining property, was located within an area defined by the Department of the Army, Galveston District, Corps of Engineers as isolated wetlands; and

WHEREAS, as mitigation, and as a condition of permitting Harris County and the City of Deer Park to fill that portion of the isolated wetlands located upon the street right of way, the Department of the Army required that the adjoining wetlands area be preserved and enhanced by Harris County and the City of Deer Park; and

WHEREAS, the City of Deer Park has determined that the adjoining wetlands area should be utilized as a public park and/or for drainage purposes; **NOW THEREFORE:**

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF DEER PARK:

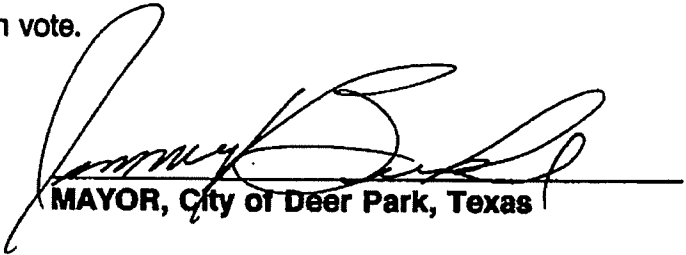
1. The City Council finds that all of the facts stated in the preceding "WHEREAS" paragraphs are true and correct and hereby adopts same as a part of this Ordinance.
2. The City Council of the City of Deer Park, Texas finds that a public necessity and use exists for the acquisition of the property described in Exhibit "A" attached hereto which is incorporated herein by reference as if recited in full herein.

3. The City Council of the City of Deer Park, Texas hereby authorizes and instructs its City Attorney to file condemnation proceedings to acquire said property.

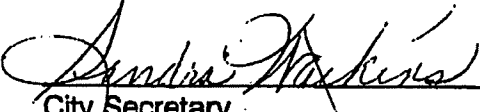
4. It is hereby officially found and determined that the meeting at which this Ordinance was adopted was open to the public and that public notice of the time, place and purpose of said meeting was given, all as ~~required~~ by Chapter 551 of the Government Code of the State of Texas.

5. The City Council finds that this Ordinance relates to the immediate preservation of the public peace, health, safety and welfare, in that it is necessary to acquire this property at the earliest possible moment, to construct East Boulevard from Spencer Highway to East 13th Street, to prevent injury by traffic accident to persons in the City of Deer Park, Texas, to facilitate fire and police protection to property in the area, and to prevent flooding, and to provide recreation facilities, thereby creating an emergency, for which the Charter requirement providing for the reading of ordinances on three (3) several days should be dispensed with, and this Ordinance be passed finally on its introduction; and, accordingly, such requirement is dispensed with, and this Ordinance shall take effect upon its passage and approval by the Mayor.

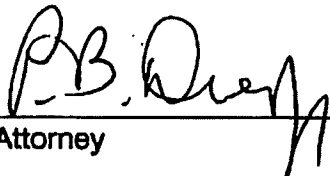
PASSED, APPROVED AND ADOPTED on the first and final reading, this ^{17th day} ~~6th~~ day of March, 1998, by a vote of 7 "ayes" and 0 "noes", this Ordinance having been read in full prior to such vote.


MAYOR, City of Deer Park, Texas

ATTEST:


City Secretary

APPROVED:


City Attorney

**PARCEL 1
DESCRIPTION**

Of 1.8292 acres of land being out of Lot 607, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said Lot 607 being conveyed by deed dated December 29, 1988 to Douglas C. Hill, Kelly L. Hill, June L. Hill, and Nicklas R. Hill, as recorded in Harris County Clerks File No. M003530. Said 1.8292 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West, and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte and the **PLACE OF BEGINNING** of the herein described tract;

THENCE continuing along the east line of East Boulevard, being in a curve to the left, having a central angle of 7° 23' 55", a radius of 1875.00 feet, an arc length of 242.12, a chord bearing of North 12° 03' 11" West, and a chord distance of 241.95 feet, to a 5/8" iron rod set for the northwest corner of the herein described tract;

THENCE South 76° 48' 11" East, for a distance of 63.14 feet to a 5/8" iron rod set;

THENCE North 72° 40' 28" East, for a distance of 96.23 feet to a 5/8" iron rod set for the beginning of a curve to the right;

THENCE along said curve, having a central angle of 108° 04' 32", a radius of 60.00 feet, an arc length of 113.18, a chord bearing of South 53° 17' 16" East, and a chord distance of 97.13 feet, to a 5/8" iron rod set for the beginning of a reverse curve;

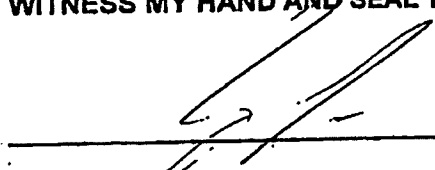
THENCE along said curve, having a central angle of 92° 35' 51", a radius of 15.00 feet, an arc length of 24.24, a chord bearing of South 45° 32' 54" East, and a chord distance of 21.69 feet, to a 5/8" iron rod set for point of tangent;

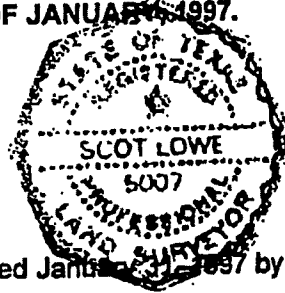
THENCE North 88° 09' 10" East, for a distance of 157.71 feet to a 5/8" iron rod set for the corner in the east line of said Lot 607;

THENCE South 00° 00' 44" East, along the east line of said Lot 607, for a distance of 184.40 feet to a 5/8" iron rod set for the common corner of Lots 594, 595, 606, and 607 of said Out Lots to the Town of La Porte;

THENCE North 89° 43' 22" West, along the common line of said Lots 594 and 607, for a distance of 353.84 feet to the PLACE OF BEGINNING and herein containing within these calls 79,680 square feet or 1.8292 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.


SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 31, 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 2
DESCRIPTION**

Of 2.0953 acres of land being out of Lot 606, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said Lot 606 being conveyed as (Tract One) by partition deed dated August 20, 1986, to L.A. Hill Jr., as recorded in Harris County Clerks File No. K796766. Said 2.0953 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the said common line of Lots 594 and 607, for a distance of 353.84 feet to a 5/8" iron rod set for the southwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE North 00° 00' 44" West, along the common line of Lots 606 and 607, of said Out Lots to the Town of La Porte for a distance of 184.40 feet to a 5/8" iron rod set for corner;

THENCE South 88° 40' 13" East, for a distance of 247.54 feet to a 5/8" iron rod set for the beginning of a curve to the left;

THENCE along said curve, having a central angle of 60° 36' 52", a radius of 15.00 feet, an arc length of 15.87, a chord bearing of North 61° 01' 21" East, and a chord distance of 15.14 feet, to a 5/8" iron rod set for the beginning of a reverse curve;

THENCE along said curve, having a central angle of 114° 00' 11", a radius of 60.00 feet, an arc length of 119.38, a chord bearing of North 87° 43' 00" East, and a chord distance of 100.64 feet, to a 5/8" iron rod set for the beginning of another reverse curve;

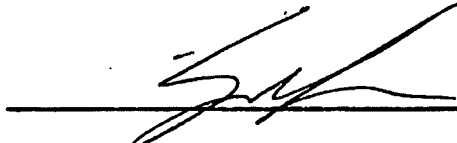
THENCE along said curve, having a central angle of $54^{\circ} 34' 03''$, a radius of 15.00 feet, an arc length of 14.29, a chord bearing of South $62^{\circ} 33' 57''$ East, and a chord distance of 13.75 feet, to a 5/8" iron rod set for point of tangent;

THENCE South $89^{\circ} 51' 01''$ East, for a distance of 110.51 feet to a 5/8" iron rod set for the corner in the common line of Lots 606 and 605 of said Out Lots to the Town of La Porte;

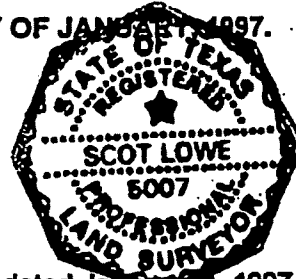
THENCE South $00^{\circ} 00' 44''$ East, along the common line of Lots 606 and 605, for a distance of 185.72 feet to a 1/2" iron rod found for the common corner of Lots 595, 596, 605, and 606, from which a 3/4" iron pipe was found north 0.58 feet and east 0.57 feet;

THENCE North $89^{\circ} 43' 22''$ West, along the common line of Lots 606 and 595, for a distance of 484.00 feet to the **PLACE OF BEGINNING** and herein containing within these calls 91,271 square feet or 2.0953 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.



SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 31, 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 3
DESCRIPTION**

Of 0.9267 acres of land being out of Lot 605, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said 0.9267 acres being out of a tract of land called The West 290.4 feet of Outlot 605, and being conveyed by deed dated November 29, 1965, to R. E. Smith, as recorded in Harris County Clerks File No. C219787. Said 0.9267 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, for a distance of 837.84 feet to a 5/8" iron rod found for southwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE North 00° 00' 44" West, along the common line of Lots 606 and 605, for a distance of 185.72 feet to a 5/8" iron rod set for corner;

THENCE South 64° 40' 47" East, for a distance of 133.00 feet to a 5/8" iron rod set for corner;

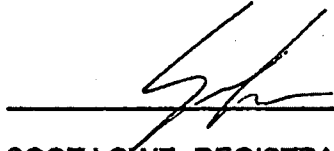
THENCE North 90° 00' 00" East, for a distance of 102.65 feet to a 5/8" iron rod set for corner;

THENCE South 73° 36' 55" East, for a distance of 70.40 feet to a 5/8" iron rod set for corner in the east line of said tract of land called The West 290.4 feet of Outlot 605. Same being the west line of a tract of land called Outlot 604 and the East 193.6 feet of Outlot 605 conveyed by deed dated November 29, 1965, to Vivian Leatherberry Smith, Trustee as recorded in Harris County Clerks File No. C219785;

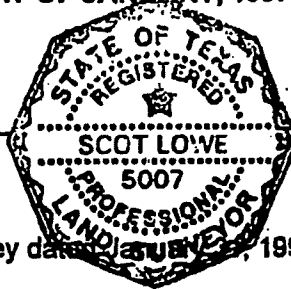
THENCE South 00° 00' 44" East, along the common line of said tract of land called The West 290.4 feet of Outlot 605 and tract of land called Outlot 604 and the East 193.6 feet of Outlot 605, for a distance of 110.38 feet to a 5/8" iron rod set for corner;

THENCE North 89° 43' 22" West, along the common line of Lots 596 and 605, for a distance of 290.40 feet to the **PLACE OF BEGINNING** and herein containing within these calls 40,366 square feet or 0.9267 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.



SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey data, 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 4
DESCRIPTION**

Of 0.6178 acres of land being out of Lots 605 and 604, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said 0.6178 acres being out of a tract of land called Outlot 604 and the East 193.6 feet of Outlot 605 conveyed by deed dated November 29, 1965, to Vivian Leatherberry Smith, Trustee, as recorded in Harris County Clerks File No. C219785. Said 0.6178 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, and the common line of Lots 596 and 605, for a distance of 1,128.24 feet to a 5/8" iron rod found for southwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE North 00° 00' 44" West, along the common line of said tract of land called Outlot 604 and the East 193.6 feet of Outlot 605, and a tract of land called The West 290.4 feet of Outlot 605 as conveyed by deed dated November 29, 1965, to R. E. Smith, and recorded in Harris County Clerks File No. C219787, for a distance of 110.38 feet to a 5/8" iron rod set for corner;

THENCE South 89° 58' 43" East, for a distance of 193.60 feet to a 5/8" iron rod set for corner in the common line of said Lots 605 and 604;

THENCE South 00° 00' 44" East, along the common line of said Lots 605 and 604, for a distance of 79.04 feet to a 5/8" iron rod set for corner;

THENCE North 84° 28' 55" East, for a distance of 125.95 feet to a 5/8" iron rod set for corner;

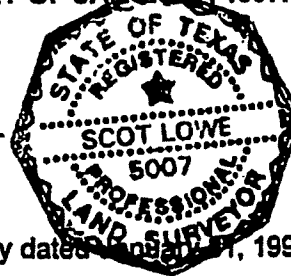
THENCE South 32° 35' 26" East, for a distance of 42.91 feet to a 5/8" iron rod set for corner;

THENCE South 00° 00' 03" East, for a distance of 8.89 feet to a 5/8" iron rod set for corner in the common line of Lots 604 and 597;

THENCE North 89° 43' 22" West, along the common line of Lots 604 and 597, for a distance of 342.08 feet to the **PLACE OF BEGINNING** and herein containing within these calls 26,910 square feet or 0.6178 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31ST DAY OF JANUARY, 1997.


SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 31, 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 5
DESCRIPTION**

Of 0.9318 acres of land being out of Lot 597, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said 0.9318 acres being out of a tract of land called The West 217 feet of Outlot 597 conveyed by deed dated February 6, 1984 as recorded in Harris County Clerks File No. J735391. Said 0.6178 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, and the common line of Lots 596 and 605, for a distance of 1,321.84 feet to a 5/8" iron rod found for northwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE South 89° 43' 22" East, along the common line of Lots 604 and 597, for a distance of 148.47 feet to a 5/8" iron rod set for corner;

THENCE South 00° 00' 03" East, for a distance of 77.12 feet to a 5/8" iron rod set for corner;

THENCE South 45° 39' 41" East, for a distance of 78.20 feet to a 5/8" iron rod set for corner;

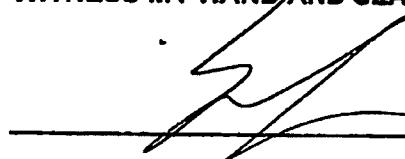
THENCE South 00° 00' 03" East, for a distance of 71.66 feet to a 5/8" iron rod set for corner;

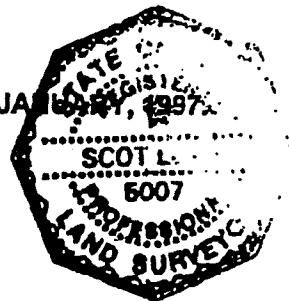
THENCE South 44° 59' 58" West, for a distance of 35.36 feet to a 5/8" iron rod set for corner;

THENCE North 90° 00' 00" West, for a distance of 179.35 feet to a 5/8" iron rod set for corner in the common line of lots 597 and 596;

THENCE North 00° 00' 44" West, along the common line of lots 597 and 596, for a distance of 229.16 to the **PLACE OF BEGINNING** and herein containing within these calls 40,587 square feet or 0.9318 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997


SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 31, 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 6
DESCRIPTION**

Of 2.7848 acres of land being out of Lot 596, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said Lot 596 being conveyed by deed dated March 21, 1996, to Clark Fire Equipment, Inc., as recorded in Harris County Clerks File No. R841447. Said 2.7848 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, for a distance of 837.84 feet to a 5/8" iron rod set for northwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE South 89° 43' 22" East, along the common line of Lots 605 and 596, for a distance of 484.00 feet to a point for corner being the common corner of Lots 605, 604, 597, and 596, from which a 1/2" iron rod was found south 2.10 feet and east 1.36 feet;

THENCE South 00° 00' 44" East, along the common line of Lots 596 and 597, for a distance of 229.16 feet to a 5/8" iron rod set for corner;

THENCE North 72° 55' 40" West, for a distance of 106.89 feet to a 5/8" iron rod set for corner;

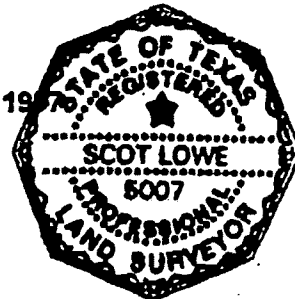
THENCE South 57° 00' 14" East, for a distance of 148.19 feet to a 5/8" iron rod set for corner;

THENCE North 62° 12' 24" West, for a distance of 85.11 feet to a 5/8" iron rod set for corner;

THENCE South 69° 06' 16" West, for a distance of 195.06 feet to a 5/8" iron rod set for corner in the common line of Lots 595 and 596;

THENCE North 00° 00' 44" West, along the common line of lots 595 and 596, for a distance of 310.71 to the **PLACE OF BEGINNING** and herein containing within these calls 121,307 square feet or 2.7848 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1975



SCOT LOWE REGISTRATION NO. 5007

Note: Description prepared in conjunction with survey dated January 31, 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 7
DESCRIPTION**

Of 6.3100 acres of land being out of Lot 594, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said 6.3100 acres also being out of a called 40.826 acres conveyed by deed dated May 5, 1978 to W.R. Coffey, Trustee, as recorded in Harris County Clerks File No. F586178. Said 6.3100 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West, and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte and the **PLACE OF BEGINNING** of the herein described tract;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, of said Out Lots to the Town of La Porte, for a distance of 837.34 to a 1/2" iron rod found for the common corner of Lots 595, 596, 606, and 605, from said 1/2" iron rod a 3/4" iron pipe was found north 0.58 feet and east 0.57 feet;

THENCE South 00° 00' 44" East, along the common line of said Lots 595 and 596, for a distance of 310.71 feet to a 5/8" iron rod set for corner;

THENCE South 72° 49' 04" West, for a distance of 184.84 feet to a 5/8" iron rod set for corner;

THENCE North 63° 47' 08" West, for a distance of 85.03 feet to a 5/8" iron rod set for corner;

THENCE North 86° 26' 38" West, for a distance of 184.24 feet to a 5/8" iron rod set for the beginning of a curve to the left;

THENCE along said curve, having a central angle of $85^{\circ} 40' 31''$, a radius of 15.00 feet, an arc length of 22.43, a chord bearing of South $50^{\circ} 43' 07''$ West, and a chord distance of 20.40 feet, to a $5/8''$ iron rod set for the beginning of a reverse curve;

THENCE along said curve, having a central angle of $157^{\circ} 32' 55''$, a radius of 60.00 feet, an arc length of 164.98, a chord bearing of South $86^{\circ} 39' 19''$ West, and a chord distance of 117.70 feet, to a $5/8''$ iron rod set for the beginning of another reverse curve;

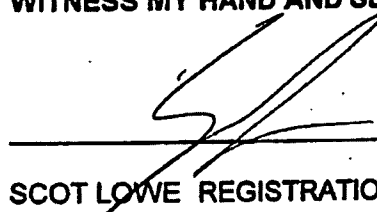
THENCE along said curve, having a central angle of $69^{\circ} 26' 29''$, a radius of 15.00 feet, an arc length of 18.18, a chord bearing of North $49^{\circ} 17' 29''$ West, and a chord distance of 17.09 feet, to a $5/8''$ iron rod set for point of tangent;

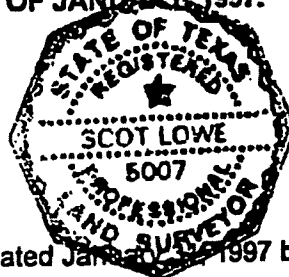
THENCE North $84^{\circ} 00' 44''$ West, for a distance of 236.28 feet to a $5/8''$ iron rod set for the corner in the east line of said East Boulevard;

THENCE North $00^{\circ} 00' 44''$ West, along the east line of said East Boulevard for a distance of 32.36 feet to a $5/8''$ iron rod set for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of $8^{\circ} 20' 27''$, a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North $04^{\circ} 10' 59''$ West, and a chord distance of 272.73 feet, to the **PLACE OF BEGINNING** and herein containing within these calls 274,866 square feet or 6.3100 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.


SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 15, 1997 by Land Surveying, Inc. (Project No. 94001)

APPENDIX C

Conservation Easement

CONSERVATION EASEMENT

THE STATE OF TEXAS §
 § **KNOW ALL MEN BY THESE PRESENTS:**
CITY OF DEER PARK, HARRIS
COUNTY, TEXAS §

This instrument is executed by the City of Deer Park, Texas (the "City") on the date below written for the purpose of establishing a Conservation Easement upon, over and across those certain lands more particularly described below, subject to those certain limitations and restrictions herein contained.

WHEREAS, the City is a political subdivision of the State of Texas, with such powers including, but not restricted to, the powers conferred expressly and permissively by Article 1175 of the Revised Civil Statutes of Texas, 1925 [V.T.C.A, Local Government Code §§ 26.001 et seq., 43.021, 43.142, 51.071 et seq., 54.001 et seq., 101.021 et seq., 141.004, 214.001, 214.901, 215.071 et seq., 217.014 et seq., 251.001, 402.002, 402.017], as now or hereafter amended. In its General Powers (Section 2.02 Code of Ordinances), the City may acquire property within or without its corporate limits for any municipal purpose in fee simple, or in any lesser interest or estate, by purchase, gift, devise, lease or condemnation, and, subject to the provisions of its Charter may manage, improve, control, regulate and police such property as many now or hereafter be owned by it.

WHEREAS, the City has acquired by purchase the fee simple estate in and to ... those certain lands more particularly described by metes and bounds in that certain Exhibit "A" which is attached hereto and made a part hereof for descriptive purposes; and

WHEREAS, the City is obligated under the terms of a Department of the Army Permit Number SWG-96-26-011, more particularly described in the "Proposed East Blvd.

Mitigation Plan, Deer Park, Texas, Harris County Engineering Division" which is attached hereto as Exhibit "B" and made a part hereof for descriptive purposes, to adopt and enforce permanent land use control measures on land owned by it in a conservation easement consistent with requirements expressed in the above referenced permit and is further authorized to adopt and enforce such permanent land use and control measures; and

WHEREAS, it has been determined by the City that the establishment of a conservation easement is a proper and authorized use of those lands described in Exhibit "A" and that the use of such land for such purposes would benefit and serve the interest of the City in performing and discharging its statutory duties under the laws of Texas; and

WHEREAS, it has been further determined by the City that a Conservation Easement of the nature and type provided for hereinbelow would be the most advantageous means whereby the permanent land use and control measures contemplated by the above referenced permit, and which the City is obligated to impose under the terms of the permit, may be accomplished.

NOW, THEREFORE, the City, for and in consideration of the benefits that would be provided by the establishment of a conservation easement, and pursuant to the authority conferred upon it by Article 1175 of the Revised Civil Statutes of Texas, 1925 and the Code of Ordinances, City of Deer Park, Texas does hereby create said conservation easement (the Easement) over, across and upon that certain parcel of land containing 15.4956 acres described in Exhibit "A" (the Easement Area). No use will be made of the Easement Area that is not consistent with or is not otherwise permitted by

this Easement. As used in connection with those certain itemized limitations Nos. "1" through "9", only, which limitations are set forth more particularly below, certain words and/or phrases shall have only those certain, specific meanings ascribed to them. The meanings ascribed to such terms and/or phrases, hereinbelow, shall be applied to such terms and/or phrases when used in the context of the itemized limitations, Nos. "1" through "9", and in no other context. The meanings to be ascribed to such terms and/or phrases as they appear or may be used in context of other provisions of this instrument shall be only as therein indicated. The words and/or phrases and their meanings, as used in item Nos. "1" through "9" are as follows:

A.) "Department of the Army Permit" shall mean that document, and that document only, that is entitled "Department of the Army Permit Number SWG-96-26-011, dated July 18, 1996 and which was prepared jointly by the U.S. ARMY CORPS OF ENGINEERS together with certain other state and federal agencies or governmental authorities described therein.

B.) "Mitigation" shall mean the restoration of approximately 15.4956 acres of wetlands within the lands described in "Exhibit A".

- 1) Except as otherwise provided for herein, no use shall be made of the Easement Area that is inconsistent with Article 1175 of the Revised Civil Statutes of Texas, 1925 and the Code of Ordinances, City Of Deer Park, Texas.
- 2) The City may from time to time, and at any time, promulgate and adopt such reasonable rules and regulations consistent with its rule making authority under law as may be necessary or that otherwise

serve to promote or to implement the objects and purposes of this Easement, or which serve to promote the interests of the City, including (by way of description and not by way of limitation) rules and regulations requiring the execution by those persons seeking access to the Easement Area of "right of entry agreements", or other similar written agreements, establishing reasonable restrictions as to manner and time of such access;

- 3) This Conservation Easement, shall be subject to all state and federal laws, rules and regulations, and to the extent applicable, any and all municipal or local laws, rules, ordinances, or land use regulations adopted by any governmental authority having jurisdiction over the Easement Area;
- 4) Any use made of the Easement Area shall be accomplished in a manner that is consistent with the requirements of Department of the Army permit, which requires that the mitigation area be protected by a deed-restricted conservation easement (or some comparable method) to ensure that wetlands in the mitigation area are not developed or destroyed. All uses permitted to be made of the Easement Area under the terms of the Easement shall be done at the sole right, cost and expense of the party making use of such Easement Area and shall be done in a manner as will not unreasonably interfere with access to the Easement Area;

- 5) The City, as owner of the land, shall have no obligation to remedy any damage to the Easement Area, including the wetlands located in the Easement Area, when damage is caused in the future by forces beyond the landowner's control, such as fire, flood, storm, or the unauthorized act of a third party.
- 6) The Corps of Engineers of the United States Army may inspect the Easement Area from time to time, may enter the premises at all reasonable times to conduct studies and monitor the use of the Easement Area. No other person shall have a third-party right of enforcement of the terms of the Easement;
- 7) The City shall have the right to use the subsurface of the Easement Area so long as such use does not substantially or materially interfere with the Easement;
- 8) Except as herein limited, the grant of the Easement made herein shall include all such rights of ingress, egress and regress as shall be necessary to enjoy and to exercise such other rights to use the Easement Area as shall be conferred by such Easement. All persons entering upon the Easement Area under this grant shall confine themselves to the uses and purposes contemplated herein, and no trespassing or other uses shall be permitted by any user of the Easement, its employees, agents or contractors;
- 9) This Easement is perpetual. Its provisions shall be covenants running with the land.

Notwithstanding any other provision of this instrument to the contrary, the itemized limitations Nos. "1" through "9", recited above shall prevail over any other provision of this instrument in the event of a conflict.

Whenever there is a reference in this instrument to a federal or state statute or regulation, the reference shall include all successor statutes and regulations. Whenever a regulatory agency is named in this instrument, the reference shall include any federal or state agency that succeeds to the authority of the named agency to enforce federal and/or state laws and regulations concerning wetlands.

Each and every provision contained in this instrument is, and shall be construed as, a separate and independent provision. If any provision of this instrument should be held to be invalid or unenforceable, the validity and enforceability of the remaining provisions of this instrument to another person or circumstance shall not be affected thereby.

Notwithstanding anything contained herein to the contrary, if at any time, and from time to time, the Easement Area is divided into two or more parcels by conveyance of ownership or by lease, all such parts shall enjoy the benefit of the Easement with respect to the Easement Area in the event of a conflict.

Whenever herein the singular number is used, the same shall include the plural, and words of any gender shall include each other gender.

Notwithstanding anything contained herein to the contrary, it is recognized that because of events or circumstances not foreseen or anticipated by the City at the present time, it may be necessary for the City to amend or revise the Easement on occasion. Accordingly, the City may, from time to time, and at anytime, amend or otherwise revise

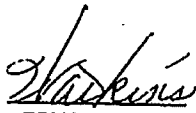
ment and, pursuant to such right, may execute and record in the appropriate records written instruments amending and revising the same. However, the right to amend or revise the Easement shall not be exercised unless the revision or amendment is in furtherance of the purpose and object of the Easement and unless the amendment or revision is made subject to the terms and provisions of any applicable permit of the Army Permit that may be in effect at the time of the amendment or

failure or delay to insist by the City, or any other party having a right of enforcement herein, upon strict performance of any one or more covenants, terms or provisions of this instrument or by law, shall not be deemed a waiver of any right to the enforcement by any other party having the right of enforcement herein, to insist on strict enforcement hereof, or a waiver of any of its rights or remedies. The consent to or refusal of the City of any act shall not be deemed to waive or render unnecessary the consent or approval of any subsequent similar act.

TESTIMONY OF WHICH this instrument has been executed on behalf of the City of Deer Park, Texas by Wayne Riddle, Mayor, pursuant to the Deer Park City Ordinance authorizing, on this the 16 day of Dec, A.D., 2003.

O FORM:

CITY OF DEER PARK, TEXAS


TRMC

K, TEXAS

By: 
WAYNE RIDDLE, Mayor
City of Deer Park, Texas

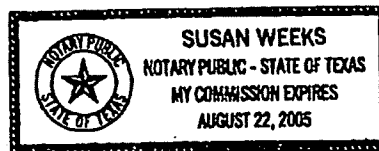
THE STATE OF TEXAS §

CITY OF DEER PARK §

This instrument was acknowledged before me on December 16, 2003
by Wayne Riddle, Mayor, City of Deer Park, Texas, the presiding officer of the City
Council of Deer Park, Texas on behalf of the City Council of Deer Park, Texas, as the
governing body of the City of Deer Park, Texas.

Susan Weeks

NOTARY PUBLIC in and for
the STATE OF TEXAS



Attachment A

PARCEL 1 DESCRIPTION

Of 1.8292 acres of land being out of Lot 607, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said Lot 607 being conveyed by deed dated December 29, 1988 to Douglas C. Hill, Kelly L. Hill, June L. Hill, and Nicklas R. Hill, as recorded in Harris County Clerks File No. M003530. Said 1.8292 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West, and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte and the PLACE OF BEGINNING of the herein described tract;

THENCE continuing along the east line of East Boulevard, being in a curve to the left, having a central angle of 7° 23' 55", a radius of 1875.00 feet, an arc length of 242.12, a chord bearing of North 12° 03' 11" West, and a chord distance of 241.95 feet, to a 5/8" iron rod set for the northwest corner of the herein described tract;

THENCE South 76° 48' 11" East, for a distance of 63.14 feet to a 5/8" iron rod set;

THENCE North 72° 40' 28" East, for a distance of 96.23 feet to a 5/8" iron rod set for the beginning of a curve to the right;

THENCE along said curve, having a central angle of 108° 04' 32", a radius of 60.00 feet, an arc length of 113.18, a chord bearing of South 53° 17' 16" East, and a chord distance of 97.13 feet, to a 5/8" iron rod set for the beginning of a reverse curve;

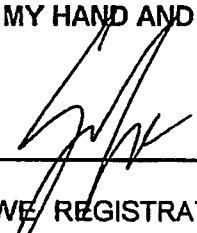
THENCE along said curve, having a central angle of 92° 35' 51", a radius of 15.00 feet, an arc length of 24.24, a chord bearing of South 45° 32' 54" East, and a chord distance of 21.69 feet, to a 5/8" iron rod set for point of tangent;

THENCE North 88° 09' 10" East, for a distance of 157.71 feet to a 5/8" iron rod set for the corner in the east line of said Lot 607;

THENCE South 00° 00' 44" East, along the east line of said Lot 607, for a distance of 184.40 feet to a 5/8" iron rod set for the common corner of Lots 594, 595, 606, and 607 of said Out Lots to the Town of La Porte;

THENCE North 89° 43' 22" West, along the common line of said Lots 594 and 607, for a distance of 353.84 feet to the PLACE OF BEGINNING and herein containing within these calls 79,680 square feet or 1.8292 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.


SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated 12/20/96 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 2
DESCRIPTION**

Of 2.0953 acres of land being out of Lot 606, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said Lot 606 being conveyed as (Tract One) by partition deed dated August 20, 1986, to L.A. Hill Jr., as recorded in Harris County Clerks File No. K796766. Said 2.0953 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the said common line of Lots 594 and 607, for a distance of 353.84 feet to a 5/8" iron rod set for the southwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE North 00° 00' 44" West, along the common line of Lots 606 and 607, of said Out Lots to the Town of La Porte for a distance of 184.40 feet to a 5/8" iron rod set for corner;

THENCE South 88° 40' 13" East, for a distance of 247.54 feet to a 5/8" iron rod set for the beginning of a curve to the left;

THENCE along said curve, having a central angle of 60° 36' 52", a radius of 15.00 feet, an arc length of 15.87, a chord bearing of North 61° 01' 21" East, and a chord distance of 15.14 feet, to a 5/8" iron rod set for the beginning of a reverse curve;

THENCE along said curve, having a central angle of 114° 00' 11", a radius of 60.00 feet, an arc length of 119.38, a chord bearing of North 87° 43' 00" East, and a chord distance of 100.64 feet, to a 5/8" iron rod set for the beginning of another reverse curve;

THENCE along said curve, having a central angle of $54^{\circ} 34' 03''$, a radius of 15.00 feet, an arc length of 14.29, a chord bearing of South $62^{\circ} 33' 57''$ East, and a chord distance of 13.75 feet, to a 5/8" iron rod set for point of tangent;

THENCE South $89^{\circ} 51' 01''$ East, for a distance of 110.51 feet to a 5/8" iron rod set for the corner in the common line of Lots 606 and 605 of said Out Lots to the Town of La Porte;

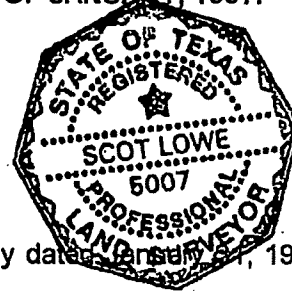
THENCE South $00^{\circ} 00' 44''$ East, along the common line of Lots 606 and 605, for a distance of 185.72 feet to a 1/2" iron rod found for the common corner of Lots 595, 596, 605, and 606, from which a 3/4" iron pipe was found north 0.58 feet and east 0.57 feet;

THENCE North $89^{\circ} 43' 22''$ West, along the common line of Lots 606 and 595, for a distance of 484.00 feet to the PLACE OF BEGINNING and herein containing within these calls 91,271 square feet or 2.0953 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.



SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 1, 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 3
DESCRIPTION**

Of 0.9267 acres of land being out of Lot 605, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said 0.9267 acres being out of a tract of land called The West 290.4 feet of Outlot 605, and being conveyed by deed dated November 29, 1965, to R. E. Smith, as recorded in Harris County Clerks File No. C219787. Said 0.9267 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, for a distance of 837.84 feet to a 5/8" iron rod found for southwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE North 00° 00' 44" West, along the common line of Lots 606 and 605, for a distance of 185.72 feet to a 5/8" iron rod set for corner;

THENCE South 64° 40' 47" East, for a distance of 133.00 feet to a 5/8" iron rod set for corner;

THENCE North 90° 00' 00" East, for a distance of 102.65 feet to a 5/8" iron rod set for corner;

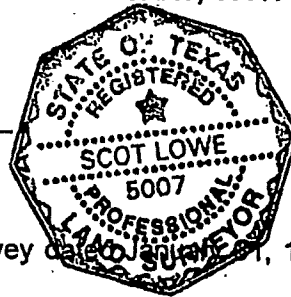
THENCE South 73° 36' 55" East, for a distance of 70.40 feet to a 5/8" iron rod set for corner in the east line of said tract of land called The West 290.4 feet of Outlot 605. Same being the west line of a tract of land called Outlot 604 and the East 193.6 feet of Outlot 605 conveyed by deed dated November 29, 1965, to Vivian Leatherberry Smith, Trustee as recorded in Harris County Clerks File No. C219785;

THENCE South 00° 00' 44" East, along the common line of said tract of land called The West 290.4 feet of Outlot 605 and tract of land called Outlot 604 and the East 193.6 feet of Outlot 605, for a distance of 110.38 feet to a 5/8" iron rod set for corner;

THENCE North 89° 43' 22" West, along the common line of Lots 596 and 605, for a distance of 290.40 feet to the PLACE OF BEGINNING and herein containing within these calls 40,366 square feet or 0.9267 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.


SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 31, 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 4
DESCRIPTION**

Of 0.6178 acres of land being out of Lots 605 and 604, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said 0.6178 acres being out of a tract of land called Outlot 604 and the East 193.6 feet of Outlot 605 conveyed by deed dated November 29, 1965, to Vivian Leatherberry Smith, Trustee, as recorded in Harris County Clerks File No. C219785. Said 0.6178 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, and the common line of Lots 596 and 605, for a distance of 1,128.24 feet to a 5/8" iron rod found for southwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE North 00° 00' 44" West, along the common line of said tract of land called Outlot 604 and the East 193.6 feet of Outlot 605, and a tract of land called The West 290.4 feet of Outlot 605 as conveyed by deed dated November 29, 1965, to R. E. Smith; and recorded in Harris County Clerks File No. C219787, for a distance of 110.38 feet to a 5/8" iron rod set for corner;

THENCE South 89° 58' 43" East, for a distance of 193.60 feet to a 5/8" iron rod set for corner in the common line of said Lots 605 and 604;

THENCE South 00° 00' 44" East, along the common line of said Lots 605 and 604, for a distance of 79.04 feet to a 5/8" iron rod set for corner;

THENCE North 84° 28' 55" East, for a distance of 125.95 feet to a 5/8" iron rod set for corner;

THENCE South 32° 35' 26" East, for a distance of 42.91 feet to a 5/8" iron rod set for corner,

THENCE South 00° 00' 03" East, for a distance of 8.89 feet to a 5/8" iron rod set for corner in the common line of Lots 604 and 597;

THENCE North 89° 43' 22" West, along the common line of Lots 604 and 597, for a distance of 342.08 feet to the PLACE OF BEGINNING and herein containing within these calls 26,910 square feet or 0.6178 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.



SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 5
DESCRIPTION**

Of 0.9318 acres of land being out of Lot 597, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said 0.9318 acres being out of a tract of land called The West 217 feet of Outlot 597 conveyed by deed dated February 6, 1984 as recorded in Harris County Clerks File No. J735391. Said 0.6178 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933, Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, and the common line of Lots 596 and 605, for a distance of 1,321.84 feet to a 5/8" iron rod found for northwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE South 89° 43' 22" East, along the common line of Lots 604 and 597, for a distance of 148.47 feet to a 5/8" iron rod set for corner;

THENCE South 00° 00' 03" East, for a distance of 77.12 feet to a 5/8" iron rod set for corner;

THENCE South 45° 39' 41" East, for a distance of 78.20 feet to a 5/8" iron rod set for corner;

THENCE South 00° 00' 03" East, for a distance of 71.66 feet to a 5/8" iron rod set for corner;

THENCE South 44° 59' 58" West, for a distance of 35.36 feet to a 5/8" iron rod set for corner;

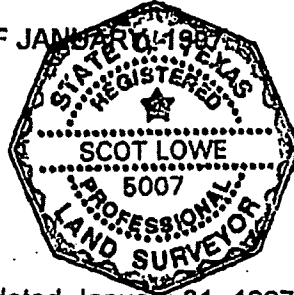
THENCE North 90° 00' 00" West, for a distance of 179.35 feet to a 5/8" iron rod set for corner in the common line of lots 597 and 596;

THENCE North 00° 00' 44" West, along the common line of lots 597 and 596, for a distance of 229.16 to the PLACE OF BEGINNING and herein containing within these calls 40,587 square feet or 0.9318 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY 1997



SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 31, 1997 by Land Surveying, Inc. (Project No. 94001)

**PARCEL 6
DESCRIPTION**

Of 2.7848 acres of land being out of Lot 596, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said Lot 596 being conveyed by deed dated March 21, 1996, to Clark Fire Equipment, Inc., as recorded in Harris County Clerks File No. R841447. Said 2.7848 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, for a distance of 837.84 feet to a 5/8" iron rod set for northwest corner and the **PLACE OF BEGINNING** of the herein described tract;

THENCE South 89° 43' 22" East, along the common line of Lots 605 and 596, for a distance of 484.00 feet to a point for corner being the common corner of Lots 605, 604, 597, and 596, from which a 1/2" iron rod was found south 2.10 feet and east 1.36 feet;

THENCE South 00° 00' 44" East, along the common line of Lots 596 and 597, for a distance of 229.16 feet to a 5/8" iron rod set for corner;

THENCE North 72° 55' 40" West, for a distance of 106.89 feet to a 5/8" iron rod set for corner;

THENCE South 57° 00' 14" East, for a distance of 148.19 feet to a 5/8" iron rod set for corner;

THENCE North 62° 12' 24" West, for a distance of 85.11 feet to a 5/8" iron rod set for corner;

THENCE South 69° 06' 16" West, for a distance of 195.06 feet to a 5/8" iron rod set for corner in the common line of Lots 595 and 596;
THENCE North 00° 00' 44" West, along the common line of lots 595 and 596, for a distance of 310.71 to the PLACE OF BEGINNING and herein containing within these calls 121,307 square feet or 2.7848 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.


SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 21, 1997
by Land Surveying, Inc. (Project No. 94001)

**PARCEL 7
DESCRIPTION**

Of 6.3100 acres of land being out of Lot 594, of the Out Lots to the Town of La Porte, according to the map or plat thereof recorded in Volume 1, Page 33, of the Map Records Harris County, Texas. Said 6.3100 acres also being out of a called 40.826 acres conveyed by deed dated May 5, 1978 to W.R. Coffey, Trustee, as recorded in Harris County Clerks File No. F586178. Said 6.3100 acres being located in the N. Clopper Survey, Abstract No. 198, Harris County, Texas and being more particularly described by metes and bounds as follows; (Bearings based on R.O.W. alignment of East Boulevard as recorded in Harris County Clerks File No. G364933);

COMMENCING at a 5/8" iron rod found for the southeast corner of a called 3.0580 acre tract (Parcel 7) conveyed by deed dated September 12, 1979, to The City of Deer Park as recorded in Harris County Clerks File No. G364933. Said iron rod also being at the intersection of the north line of "X" Street (based on a 80.00' R.O.W.) and the east line of East Boulevard (based on a 150.00' R.O.W.). Said iron rod also being located South 89° 43' 22" East, a distance of 150.00 feet, from the southwest corner of Lot 594, of said Out Lots to the Town of La Porte;

THENCE North 00° 00' 44" West, along the east line of said East Boulevard, for a distance of 628.10 feet to a 5/8" iron rod found for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of 8° 20' 27", a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North 04° 10' 59" West, and a chord distance of 272.73 feet, to a 5/8" iron rod set in the common line of Lots 594 and 607 of said Out Lots to the Town of La Porte and the **PLACE OF BEGINNING** of the herein described tract;

THENCE South 89° 43' 22" East, along the common line of Lots 594 and 607, and the common line of Lots 595 and 606, of said Out Lots to the Town of La Porte, for a distance of 837.34 to a 1/2" iron rod found for the common corner of Lots 595, 596, 606, and 605, from said 1/2" iron rod a 3/4" iron pipe was found north 0.58 feet and east 0.57 feet;

THENCE South 00° 00' 44" East, along the common line of said Lots 595 and 596, for a distance of 310.71 feet to a 5/8" iron rod set for corner;

THENCE South 72° 49' 04" West, for a distance of 184.84 feet to a 5/8" iron rod set for corner;

THENCE North 63° 47' 08" West, for a distance of 85.03 feet to a 5/8" iron rod set for corner;

THENCE North 86° 26' 38" West, for a distance of 184.24 feet to a 5/8" iron rod set for the beginning of a curve to the left;

THENCE along said curve, having a central angle of $85^{\circ} 40' 31''$, a radius of 15.00 feet, an arc length of 22.43, a chord bearing of South $50^{\circ} 43' 07''$ West, and a chord distance of 20.40 feet, to a $5/8''$ iron rod set for the beginning of a reverse curve;

THENCE along said curve, having a central angle of $157^{\circ} 32' 55''$, a radius of 60.00 feet, an arc length of 164.98, a chord bearing of South $86^{\circ} 39' 19''$ West, and a chord distance of 117.70 feet, to a $5/8''$ iron rod set for the beginning of another reverse curve;

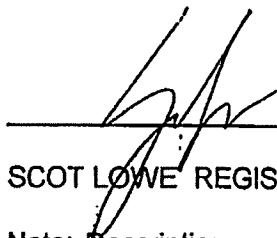
THENCE along said curve, having a central angle of $69^{\circ} 26' 29''$, a radius of 15.00 feet, an arc length of 18.18, a chord bearing of North $49^{\circ} 17' 29''$ West, and a chord distance of 17.09 feet, to a $5/8''$ iron rod set for point of tangent;

THENCE North $84^{\circ} 00' 44''$ West, for a distance of 236.28 feet to a $5/8''$ iron rod set for the corner in the east line of said East Boulevard;

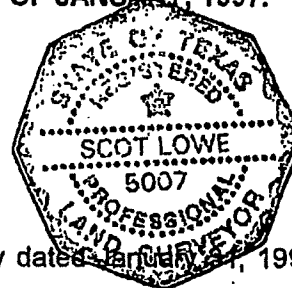
THENCE North $00^{\circ} 00' 44''$ West, along the east line of said East Boulevard for a distance of 32.36 feet to a $5/8''$ iron rod set for the beginning of a curve to the left;

THENCE continuing along the east line of East Boulevard and said curve, having a central angle of $8^{\circ} 20' 27''$, a radius of 1875.00 feet, an arc length of 272.97, a chord bearing of North $04^{\circ} 10' 59''$ West, and a chord distance of 272.73 feet, to the PLACE OF BEGINNING and herein containing within these calls 274,866 square feet or 6.3100 acres of land.

WITNESS MY HAND AND SEAL THIS THE 31st DAY OF JANUARY, 1997.



SCOT LOWE REGISTRATION NO. 5007



Note: Description prepared in conjunction with survey dated January 21, 1997 by Land Surveying, Inc. (Project No. 94001)