

Indian River County, Florida
Class I Landfill

Issued for Bid

Segment 3 Cell 1 Landfill Gas System
Expansion

**Contract Documents and
Technical Specifications**

Volume 1 of 1

Prepared for:

*Indian River County
Solid Waste Disposal District
1325 74th Avenue SW
Vero Beach, Florida 32968*

Issue Date:

November 2020



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Professional Engineers Certification for Joseph P. Curro, P.E., BCEE

PROJECT MANUAL – ISSUED FOR BID
INDIAN RIVER COUNTY
SOLID WASTE DISPOSAL DISTRICT

SEGMENT 3 CELL 1 LANDFILL GAS SYSTEM EXPANSION

NOVEMBER 2020

The following Technical Specifications for the Indian River County Segment 3 Cell 1 Landfill Gas System Expansion dated November 2020 were prepared under my direction and supervision.

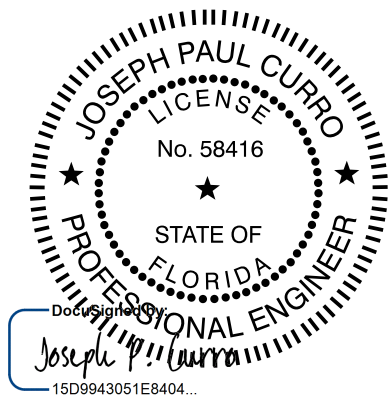
DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 31 – EARTHWORK

DIVISION 33 – UTILITIES

DIVISION 40 – PROCESS INTERCONNECTIONS

DIVISION 43 – PROCESS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT



11/24/2020

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Date

This item has been digitally signed and sealed by Joseph P. Curro, P.E.
on 11/24/2020 .
Printed copies of this document are not considered signed and sealed and the
signature must be verified on any electronic copies.

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ADVERTISEMENT FOR BIDS
BID NUMBER 2021006
INDIAN RIVER COUNTY

The Indian River County Solid Waste Disposal District (SWDD), a special dependent district of Indian River County (IRC) is accepting sealed bids until 2:00 P.M. on Wednesday, January 6, 2021. Each bid shall be submitted in an opaque sealed envelope, clearly marked on the outside with "IRC SWDD Landfill Project, Bid No. 2021006" and the name and address of the Bidder. Only bids received on or before the time/date listed will be considered. Bids mailed should be addressed to Purchasing Division, 1800 27th Street, Vero Beach, Florida 32960. All bids will be opened publicly and read aloud. Bids submitted after the deadline will not be accepted or considered.

Project Description:

Construction of the Segment 3 Cell 1 Landfill Gas System Expansion Project at the Indian River County Solid Waste Disposal District Landfill at 1325 74th Ave. SW, Vero Beach, FL 32968. This project is to include, but not limited to, mobilization/demobilization, site work, excavation, construction of landfill vertical collection wells, sideslope collectors, gas piping, valves, condensate pumps, condensate piping, and air piping.

All material and equipment furnished and all work performed shall be in strict accordance with the plans, specifications, and contract documents pertaining thereto. Copies of the documents are available at: www.demandstar.com or by selecting "Current Solicitations" at <http://www.ircgov.com/Departments/Budget/Purchasing>. All other communications concerning this bid shall be directed to IRC Purchasing Division at purchasing@ircgov.com.

All bidders shall submit one (1) original and one (1) copy of the Bid Proposal forms provided within the specifications plus one (1) electronic copy as a single PDF, submitted on a CD or thumb drive with the hard copies or e-mailed to purchasing@ircgov.com with subject "Bid 2021006" and received prior to the due date and time for the bid submittal. Please note that the questionnaire must be filled out completely including the financial statement. BID SECURITY must accompany each Bid, and must be in the form of an AIA Document A310 Bid Bond, properly executed by the Bidder and by a qualified surety, or a certified check or a cashier's check, drawn on any bank authorized to do business in the State of Florida. Bid Security must be in the sum of not less than Five Percent (5%) of the total amount of the bid, made payable to Indian River County SWDD. In the event the Contract is awarded to the Bidder, Bidder will enter in a Contract with the SWDD and furnish the required one hundred percent (100%) Public Construction Bond and insurance within the timeframe set by the SWDD. If Bidder fails to do so, the Bid Security shall be retained by the SWDD as liquidated damages and not as penalty.

The SWDD reserves the right to delay awarding of the Contract for a period of ninety (90) days after the bid opening, to waive informalities in any bid, or reject any or all bids in whole or in part with or without cause/or to accept the bid that, in its judgement, will serve the best interest of Indian River County, Florida. The SWDD will not reimburse any Bidder for bid preparation costs.

A MANDATORY Pre-Bid Conference will be held on Wednesday, December 9, 2020, at 10:00 A.M. at the Indian River County Solid Waste Disposal District Landfill Office parking lot at 1325 74th Ave. SW, Vero Beach, FL 32968. Masks and social distancing are requested.

ATTENDANCE AT THIS CONFERENCE BY ALL BIDDERS IS MANDATORY. No persons will be allowed to sign-in as in attendance after the meeting has begun.

INDIAN RIVER COUNTY
PURCHASING MANAGER

For Publication in the Indian River Press Journal: November 29, 2020
Please furnish tear sheet and Affidavit of Publication to:

INDIAN RIVER COUNTY PURCHASING DIVISION
1800 27th Street
Vero Beach, Florida 32960

Indian River County

Solid Waste Disposal District

Indian River County Landfill Segment 3 Cell 1 Landfill Gas System Expansion

IRC Bid Number 2021006

SECTION 00200 INSTRUCTIONS TO BIDDERS

ARTICLE 1. QUALIFICATIONS OF BIDDERS

- 1.1 Defined Terms: Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract (No. C-700, 2007 ed.) have the meanings assigned to them in the General Conditions. The term "Bidder" means one who submits a bid directly to OWNER, as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible, and responsive Bidder to whom OWNER (on the basis of OWNER's evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement or Invitation to Bid, Instructions to Bidders, The Bid Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
- 1.2 The investigation of a Bidder will seek to determine whether the organization is adequate in size, is authorized to do business in the jurisdiction where the project is located, has had previous experience and whether available equipment and financial resources are adequate to assure OWNER that the Work will be completed in accordance with the terms of the Agreement. The amount of other work to which the Bidder is committed may also be considered.
- 1.3 In evaluating Bids, OWNER will consider the qualifications of only those Bidders whose Bids are in compliance with the prescribed requirements.
- 1.4 OWNER reserves the right to reject any Bid if the evidence submitted by, or the investigation of, such Bidder fails to satisfy OWNER that such Bidder is properly qualified to carry out the obligations of the Contract Documents and to complete the Work contemplated therein.
- 1.5 To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit, within five (5) days of OWNER's request, written evidence, such as financial data, previous experience, present commitments, and other such data as may be necessary to prove to the satisfaction of the OWNER that the Bidder is qualified by experience to do the work and is prepared to complete the work within the stated time period.

ARTICLE 2. COPIES OF CONTRACT DOCUMENTS

- 2.1 Complete sets the Bidding Documents may be obtained as stated in the Advertisement for Bids.
- 2.2 Complete sets of Contract Documents shall be used in preparing Bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents.
- 2.3 OWNER and ENGINEER in making copies of Contract Documents available do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

ARTICLE 3 EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- 3.1 Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may in any manner affect cost, progress or performance of the Work, (c) become familiar with Federal, State and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (d) study and carefully correlate Bidder's observations with the requirements of the Contract Documents, and (e) notify ENGINEER of all conflicts, errors, or discrepancies in the Contract Documents.
- 3.2 To obtain access to the site, one of the following shall be contacted: Himanshu H. Mehta, P.E., Managing Director, 772-226-3211 or Ron Jones, Assistant Managing Director, 772-226-3214. Project work site is located at 1325 74th Ave SW, Vero Beach, Florida 32963 as shown on the construction plans.
- 3.3 Information and data reflected in the Contract Documents with respect to underground facilities at or contiguous to the site is based upon information and data furnished to OWNER and ENGINEER by owners of such underground facilities or others, and OWNER does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.
- 3.4 Surveys and investigative reports of subsurface or latent physical conditions at the site which have been relied upon by ENGINEER in preparing the Contract Documents are identified in Article 4 of the Supplementary Conditions. Copies of these reports are included in the Appendix to the Project Manual. These reports, if supplied, are not guaranteed or warranted as to accuracy or completeness, nor are they part of the Contract Documents.
- 3.5 Before submitting a Bid, each Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests, and studies, and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and underground facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance, or furnishing of the work and which Bidder deems necessary to determine its Bid for performing and furnishing the work in accordance with the time, price and other terms and conditions of the Contract Documents.
- 3.6 On request in advance, OWNER will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid and as authorized by OWNER. Bidder shall fill all holes, clean up, and restore the site to its former condition upon completion of such explorations.
- 3.7 The lands upon which the work is to be performed, right-of-way and easements for access thereto and other lands designed for use by the Contractor in performing the work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by and paid for by the Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by the OWNER unless otherwise provided in the Contract Documents.
- 3.8 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this the Instructions to Bidders, that without exception the Bid is premised upon performing and furnishing the work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and

detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the work.

ARTICLE 4 INTERPRETATIONS

- 4.1 All questions about the meanings or intent of the Contract Documents are to be directed in writing to purchasing@ircgov.com. Interpretation or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda mailed, emailed, or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Questions received less than ten days prior to the date for the opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will not be binding and will be without legal effect. Bidders or their subcontractors or agents are not to contact the ENGINEER directly.
- 4.2 Addenda may be issued to clarify, correct, or change the Contract Documents, as deemed advisable by OWNER or ENGINEER.
- 4.3 Bidders are responsible for determining that they have received all Addenda issued.
- 4.4 Cone of Silence. Potential bidders/respondents and their agents must not communicate in any way with the Board of Commissioners, County Administrator, SWDD staff member or any County staff other than Purchasing personnel in reference or relation to this solicitation. This restriction is effective from the time of bid advertisement until the SWDD Board meets to authorize award. Such communication may result in disqualification.

ARTICLE 5 PRE-BID CONFERENCE

- 5.1 A mandatory pre-bid conference will be held between prospective bidders, ENGINEER and OWNER on Wednesday, December 2, 2020 at 10:00 a.m. at the Indian River County Landfill Conference Room at 1325 74th Ave. SW, Vero Beach, FL 32968 to discuss the requirements of the Contract Documents. No person arriving after the meeting has begun will be allowed to sign-in as in attendance.

ARTICLE 6 BID SECURITY

- 6.1 Each Bid must be accompanied by Bid Security made payable to OWNER in an amount of five percent (5%) of the Bidder's maximum base bid price and in the form of a certified check; cashier's check; or an AIA Document A310 Bid Bond issued by a surety meeting the requirements of Paragraph 5.01 of the General Conditions.
- 6.2 The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Contract security and met the other conditions of the Notice of award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required Contract security within fifteen days after the Notice of Award, OWNER may annul the Notice of Award, and the Bid Security of that Bidder will be retained by the OWNER as liquidated damages and not as penalty.
- 6.3 The Bid Security of other Bidders whom OWNER believes to have a reasonable chance of receiving the award may be retained by the OWNER until the earlier of the seventh (7th) day after the effective date of the Agreement or the ninety-first (91st) day after the Bid opening, whereupon Bid security

furnished by such Bidders will be returned. Bid security with bids which are not competitive may be returned before the end of the ninety-day (90) period.

ARTICLE 7 PERFORMANCE, PAYMENT AND OTHER BONDS

- 7.1 Performance, Payment and other Bonds shall be provided in accordance with Article 5 of the Specific and General Conditions of the Contract.
- 7.2 All Bonds required as Contract Security shall be furnished with the executed Agreement.

ARTICLE 8 BID FORM

- 8.1 The Bid Form is included with the Contract Documents. Only the Bid Form provided by OWNER is acceptable. (Bidders are not to recreate the bid form. Altered or recreated bid forms will result in rejection of the bid.)
- 8.2 Bid Forms shall be completed in ink or by typewriter. The Bid price of each item on the form shall be stated in words, and figures. If unit prices are required on the Bid Form, discrepancies between unit prices and their respective total amounts will be resolved in favor of the unit prices. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 8.3 Bids by corporations shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
- 8.4 Bids by Limited Liability Companies shall be executed in the Limited Liability Company name by the Manager (or other Limited Liability Company officer/representative accompanied by evidence of authority to sign.) The Limited Liability Company address and state where the Limited Liability Company was formed shall be shown below the signature.
- 8.5 Bids by partnerships shall be executed in the partnership name and signed by a partner, whose title shall appear under the signature. The official address of the partnership shall be shown below the signature.
- 8.6 All names shall be typed or printed below the signature.
- 8.7 The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).
- 8.8 The address and telephone number to which communications regarding the Bid are to be directed shall be shown.
- 8.9 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the Contract. Bidder's state contractor license number or county registration number for the state or county of the Project, if any, shall also be shown on the Bid form.

Bidder must possess licensure as indicated in the Technical Specifications Scope of Work. Indian River County Code section 400.01(1) requires that "No person shall engage in the business of

construction, contracting or subcontracting as regulated by Florida Statutes or in a [any] categories listed in **Appendix A to Ordinance No. 94-16 without a valid certificate of competency issued by the Indian River County Building Department** unless certified under Florida Statutes.” Bidders who do not hold the appropriate licensure at the time of bid opening will be deemed non-responsive.

- 8.10 Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, clearly marked on the outside with the following information: Project Name/Title; Bid Number; and the name and address of the Bidder. If the Bid is sent through the mail, overnight delivery system, or courier, the sealed envelope, marked as set forth above, shall be enclosed in a separate outer envelope with the notation "BID ENCLOSED" on the outside.
- 8.11 The Bidder shall submit an original and one copy of the Bid using exact copies of the forms, furnished herewith. The blank spaces on the Bid Form shall be filled in correctly for each Bid Item for which a Bid is submitted. All Bids shall be accompanied by the Bid Security and other required documents.
- 8.12 Additional forms to be submitted with Bid Form include: Section 00431 – “Schedule of Subcontractors”; Section 00450 – “Schedule of Suppliers”; Section 00452 – “Disclosure of Relationships”; Section 00454 – “Confirmation of a Drug-Free Workplace”; Section 00455 – “Non-Collusive Affidavit”; Section 00456 – “General Information Required of Bidders”; Section 00460 – “Schedule of Alternate Suppliers”; Section 00470 – “Certification Regarding Prohibition Against Contracting with Scrutinized Companies”; Section 00480 – “Certificate of Compliance with the Florida Trench Safety Act”; and included in Section 00800 – “Certificates of Insurance”.

ARTICLE 9 RECEIPT OF BIDS

- 9.1 Sealed Bids for the work of this Contract will be received at the time and place indicated in the Advertisement for Bids.
- 9.2 OWNER may consider non-responsive any Bid not prepared and submitted in accordance with the provisions hereof.
- 9.3 Bidders are cautioned that it is the responsibility of each individual bidder to assure that their bid is in the possession of the responsible official or the designated alternate prior to the stated time and at the place of the Bid Opening. OWNER is not responsible for bids delayed by mail and/or delivery services, of any nature.
- 9.4 Opening of Bids, Bids will be opened and (unless obviously non-responsive) read aloud publicly. An abstract of the amounts of base Bids and major alternates (if any) will be made available to Bidders after the opening of Bids.

ARTICLE 10 MODIFICATION AND WITHDRAWAL OF BIDS

- 10.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.
- 10.2 Bids may be withdrawn prior to the scheduled time (or authorized postponement thereof) for the opening of Bids.

10.3 Any Bid received after the time and date specified shall not be considered.

10.4 If, within twenty-four (24) hours after Bids are opened, any Bidder files a duly signed, written notice with OWNER and promptly thereafter demonstrates to the reasonable satisfaction of OWNER that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid and the Bid security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the work to be provided under the Contract Documents

ARTICLE 11 AWARD OF CONTRACT

11.1 The Contract will be awarded to the lowest responsive and responsible Bidder (Successful Bidder). Such a Bidder shall possess the skill, ability, and integrity necessary for the faithful performance of the work. The term "lowest responsive and responsible Bidder" as used herein shall mean the Bidder whose Bid is the lowest of those Bidders possessing the skill, ability, and integrity necessary to the faithful performance of the Work.

11.2 OWNER reserves the right to reject any and all Bids, to waive any and all informalities if it is in OWNER's best interest to do so, and the right to disregard all nonconforming, non-responsive or conditional Bids. All bids will remain subject to acceptance for ninety days after the day of the Bid opening, but the OWNER may, in its sole discretion, release any Bid and return the Bid Security prior to that date.

11.3 In evaluating Bids, OWNER will consider the qualifications of the Bidder, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

11.4 OWNER may consider the qualifications and experience of subcontractors, suppliers, and other persons and organizations proposed for those portions of the work as to which the identity of subcontractors, suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. OWNER may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the work when such data is required to be submitted prior to the Notice to Award.

11.5 OWNER may conduct such investigations as OWNER deems necessary to assist in the evaluation of any Bid and establish the responsibility, qualifications, and financial ability of Bidders, proposed subcontractors, suppliers, and other persons and organizations to perform and furnish the work in accordance with the Contract Documents to OWNER's satisfaction within the prescribed time.

11.6 If the Contract is to be awarded, OWNER will give the Successful Bidder a Notice of Award within ninety (90) days after the day of the Bid opening.

11.7 More than one Bid from an individual, firm, partnership, corporation, or association under the same or different names will not be considered. Reasonable grounds for believing that one Bidder is financially interested in more than one proposal for the same work will cause the rejection of all proposals in which such Bidders are believed to be interested. Any or all proposals will be rejected if there is reason to believe that collusion exists among the Bidders, and no participants in such collusion will be considered in future proposals for the same work.

11.8 Within fifteen (15) calendar days of the date of the Notice of Award of the Contract, the Bidder to whom the Contract is awarded shall execute and deliver two (2) original Contracts to the OWNER, together with a Public Construction Bond for 100 percent (100%) of the contract price, in the forms

set forth in the Contract Documents and General Conditions; and all required insurance certificates, before the Contract will be executed by the OWNER.

- 11.9 Failure upon the part of the Bidder to whom the Contract has been awarded to execute and deliver the Contract, Public Construction Bond and required insurance in the manner and within the time provided shall be just cause for cancellation of the award. It is understood and agreed by said Bidder, that if the award is cancelled for the above reason, the certified check or Bid Bond shall become the property of the OWNER, not as a penalty, but as liquidated damages.
- 11.10 SUBSTITUTE OR "OR EQUAL" ITEMS: The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or equal" item of material or equipment may be furnished or used by Contractor if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by ENGINEER is set forth in Paragraph 6.05 of the General Conditions and may be supplemented in the General Requirements.
- 11.11 CONTRACTOR certifies that it and its related entities as defined by Florida law are not on the Scrutinized Companies that Boycott Israel List, created pursuant to s. 215.4725 of the Florida Statutes, and are not engaged in a boycott of Israel. In addition, if this agreement is for goods or services of one million dollars or more, CONTRACTOR certifies that it and its related entities as defined above by Florida law are not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to Section 215.473 of the Florida Statutes and are not engaged in business operations in Cuba or Syria.

OWNER may terminate this Contract if CONTRACTOR is found to have submitted a false certification as provided under section 287.135(5), Florida Statutes, been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in business operations in Cuba or Syria, as defined by section 287.135, Florida Statutes.

OWNER may terminate this Contract if CONTRACTOR, including all wholly owned subsidiaries, majority-owned subsidiaries, and parent companies, that exist for the purpose of making profit, is found to have been placed on the Scrutinized Companies that Boycott Israel List or is engaged in a boycott of Israel as set forth in section 215.4725, Florida Statutes.

Accordingly, firms responding to this solicitation shall return with their response an executed copy of the attached "Certification Regarding Prohibition Against Contracting With Scrutinized Companies." Failure to return this executed form with submitted bid/proposal/statement of qualifications will result in the response being deemed non-responsive and eliminated from consideration.

- 11.12 E-VERIFY: Contractor must be registered with and use the Department of Homeland Security's E-Verify system (www.e-verify.gov) to confirm the employment eligibility of all newly hired employees. Owner, contractor, and subcontractors may not enter into a contract unless each party to the contract registers with and uses the E-Verify system. Contractor is responsible for obtaining proof of E-Verify registration for all subcontractors. This requirement applies to any provider of services or goods.

ARTICLE 12 EXECUTION OF AGREEMENT

- 12.1 When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by at least two (2) unsigned copies of the Agreement and all other applicable Contract Documents. Within five (5) working days, excluding Saturdays, Sundays, and legal holidays, after the date of receipt of such notification Contractor shall execute and return all copies of the Agreement and all other applicable Contract Documents to OWNER.
- 12.2 CONTRACT TIME; The number of days within which, or dates by which, the work is to be substantially completed and also complete and ready for final payment (the Contract Time) are set forth in the Bid Form (Section 00300) and the Agreement (Section 00530).
- 12.3 LIQUIDATED DAMAGES; Provisions for liquidated damages are set forth in the Agreement (Section 00530).

ARTICLE 13 SAFETY AND HEALTH REGULATIONS

- 13.1 This project is subject to the Safety and Health Regulations (CFR 29, Part 1926, and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974 and CFR 29, Part 1910, General Industry Safety and Health Regulations Identified as Applicable to Construction.
- 13.2 The Successful Bidder shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 (PL-91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL-91-54).
- 13.3 The Successful Bidder shall have a competent person or persons, as required under the Occupational Safety and Health Act, on the Site to inspect the Work and to supervise the conformance of the Work with the regulations of the Act.

ARTICLE 14 PUBLIC CONSTRUCTION BOND

The successful Bidder as Contractor shall furnish the OWNER immediately upon delivery with the executed Contract a Public Construction Bond in an amount equal to 100 percent (100%) of the contract price, in the form provided in the Contract Documents. The Surety shall be authorized to issue surety bonds in Florida and be included in the most recent United States Department of Treasury List of Acceptable Sureties. The successful Bidder shall require the attorney-in-fact, who executed the Public Construction Bond to affix a current certified copy of their Power of Attorney, reflecting such person's authority as Power of Attorney in the State of Florida. Further, at the time of execution of the Contract, the successful Bidder shall provide a copy of the Surety's current valid Certificate of Authority issued by the United States Department of the Treasury under 31 United States Code sections 9304-9308.

ARTICLE 15 PUBLIC DISCLOSURE STATEMENT

Any entity entering into a contract with Indian River County as OWNER shall disclose any relationship that may exist between the contracting entity and an Indian River County Commissioner or Indian River County employee. The relationship with either must be disclosed as follows: Father, mother, son daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, daughter-in-law, son-in-law, brother-in-law, sister-in-law, stepfather, stepmother, stepson, stepdaughter, stepbrother, half-brother, half-sister, grandparent, or grandchild. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of the entity.

ARTICLE 16 FLORIDA PRODUCED LUMBER

The selected Bidder agrees to comply with the provisions of Section 255.20, Florida Statutes, as such statute may be amended from time to time, wherein Indian River County as OWNER must specify lumber, timber and other forest products produced and manufactured in Florida whenever such products are available and their price, fitness and quality are equal.

ARTICLE 17 TRENCH SAFETY

Florida Statutes Section 553.60 through 553.64, known as the "Trench Safety Act" requires all contractors engaged by Indian River County, Florida to comply with Occupational Safety and Health Administration's excavation safety standard, found in 29 C.F.R. s. 1926.650 Subpart P. All prospective subcontractors are required to sign a Trench Safety Act Compliance Statement and provide compliance cost information where indicated. The costs for complying with the Trench Safety Act must be incorporated into the Bid.

ARTICLE 18 PUBLIC ENTITY CRIME STATEMENT

Pursuant to Florida Statutes Section 287.133(2)(a), all Bidders are hereby notified that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity (defined as the State of Florida, any of its departments or agencies, or any political subdivision); may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Florida Statutes Section 287.017 for CATEGORY TWO [currently \$35,000] for a period of 36 months from the date of being placed on the convicted vendor list. A "public entity crime" means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid, proposal, reply, or contract for goods or services, any lease for real property, or any contract for the construction or repair of a public building or public work, involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

ARTICLE 19 PERMITS, IMPACT, AND INSPECTION FEES.

In accordance with Florida Statutes Section 218.80, the "Public Bid Disclosure Act", SWDD as OWNER is obligated to disclose all license, permit, impact, or inspection fees that are payable to Indian River County in connection with the construction of the Work by the accepted bidder. All permit, impact, or inspection fees payable to Indian River County in connection with the work on this SWDD project will be paid by SWDD, with the exception of re-inspection fees. The Bidder shall not include ANY PERMIT, IMPACT, NOR INSPECTION FEES payable to Indian River County in the bid. Other governmental entities that may have additional permits or fees in relation to this project are: Florida Department of Environmental Protection.

ARTICLE 20 DIRECT PURCHASE OF EQUIPMENT BY THE COUNTY

Indian River County SWDD reserves the option to purchase certain tangible materials necessary for the performance of the Contract, and thereby save the amount of the sales tax thereon by virtue of the Owner's status as a Tax-Exempt Institution. For the purpose of these procedures, the Contractor will

assign to the County and SWDD any rights the Contractor may have under quotes, contracts or commitments received from the particular vendor or supplier for the materials described in the requisition. The invoiced amount of County Purchased Materials and applicable sales tax, had the purchases not been tax exempt, once finalized through the Owner's Purchase Order and after confirmation of completed delivery and acceptance, will be deducted from the Contractor's Contract price via Change Order.

ARTICLE 21 LOCAL PREFERENCE

Indian River County and SWDD have no local ordinance or preferences, as set forth in Florida Statutes Section 255.0991 (2) in place, therefore no preference prohibited by that section will be considered in the acceptance, review, or award of this bid.

ARTICLE 22 BID PROTEST

Any actual or prospective bidder or proposer who is aggrieved in connection with a competitive selection process may protest to the Purchasing Manager. The protest shall be submitted to the Purchasing Manager in writing within seven (7) calendar days after the bidder or proposer knows or should have known of the facts giving rise to the protest. If the protest is not resolved by mutual agreement, the Purchasing Manager shall promptly issue a decision in writing, after consulting the using Department and the Office of the County Attorney.

ARTICLE 23 NON-DISCRIMINATION

Indian River County and SWDD will not knowingly do business with vendors or contractors who discriminate on the basis of race, color or national origin, sex, sexual orientation, gender identity, age and/or disability. Through the course of providing services to the County, Contractors shall affirmatively comply with all applicable provisions of Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987 and the Florida Civil Rights Act of 1992, as well as all other applicable regulations, guidelines, and standards. Any person who believes their rights have been violated should report such discrimination to the County's Title VI/Nondiscrimination Coordinator through the office of the County Attorney.

ARTICLE 24 INDEMNIFICATION

The successful Bidder shall indemnify and hold harmless the County, SWDD, and its commissioners, officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the contractor and persons employed or utilized by the contractor in the performance of the construction contract.

END OF SECTION 00200

SECTION 00300
BID FORM
TO**Indian River County****Solid Waste Disposal District****Indian River County Landfill Segment 3 Cell 1 Landfill Gas System Expansion Project****IRC Bid Number 2021006**

The undersigned declares that the only persons or parties interested in this Bid as principals are as stated; that the Bid is made without any collusion with other persons, firms, or corporations; that all the Contract Documents as prepared by CDM Smith, 1701 Highway A-1-A, Suite 301, Vero Beach Florida, 32963 and dated November 2020 have been carefully examined; that the undersigned is fully informed in regard to all conditions pertaining to the Work and the place where it is to be done, and from them the undersigned makes this Bid. These prices shall cover all expenses incurred in performing the Work required under the Contract Documents, of which this Bid Form is a part.

CONTRACTOR shall complete all work as specified or indicated in the Contract Documents. The work is generally described as follows, which shall include, but is not necessarily limited to the following:

Construction of the Segment 3 Cells 1 Landfill Gas System Expansion Project at the Indian River County Solid Waste Disposal District Landfill at 1325 74th Ave. SW, Vero Beach, FL 32968. This project is to include, but not limited to, mobilization/demobilization; site work; installation of landfill vertical gas collection wells, landfill gas piping, sideslope collectors, valves, well dewatering pumps, condensate piping, and compressed air piping.

The work of this Contract comprises the construction of the above described improvements. The scope of this Contract shall include work associated with mobilization/demobilization, new construction, improvements to the site, and installation of CONTRACTOR furnished equipment as indicated in the Technical Specifications. All work shall be completed in accordance with the Contract Documents and be in accordance with the Florida Building Codes.

THIS BID IS SUBMITTED TO: Indian River County Purchasing Division
1800 27th Street
Vero Beach, FL 32960

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in the Contract Documents and in accordance with the other terms and conditions of the Contract Documents.
2. Bidder accepts all of the terms and conditions of the Advertisement for Bids and Instructions to Bidders. This Bid will remain subject to acceptance for ninety (90) days after the day of Bid opening. Bidder will sign and submit the Agreement with the bond and other documents required by the Bidding Requirements within fifteen (15) calendar days after the date of OWNER's Notice of Award.
3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

(a) Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date	Number
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

(b) Bidder has familiarized itself with the nature and extent of the Contract Documents, the work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or finishing of the work.

(c) Bidder has studied carefully all drawings of physical conditions which are identified in Paragraph 4.02 of the General Conditions as amended by Paragraph SC-4.02 of the Supplementary Conditions.

(d) Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in (c) above) which pertain to the physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the work as Bidder considers necessary for the performance or furnishing of the work at the contract price, within the contract time and in accordance with the other terms and conditions of the contract documents, including specifically the provisions of Paragraph 4.02 of the General Conditions; and no additional examination, investigations, explorations, test, reports, studies or similar information or data or will be required by Bidder for such purposes.

(e) Bidder has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing underground facilities at or contiguous to the site and assumes responsibility for the accurate location of said underground facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said underground facilities are or will be required by Bidder in order to perform and furnish the work at the contract price, within the contract time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Paragraph 4.04 of the General Conditions.

(f) Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

(g) Bidder has given ENGINEER written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to Bidder.

(h) This bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain

from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

4. Bidder will complete and include with the bid the Schedule of Bid Items attached to this proposal. The quantities shown on the Schedule of Bid Items are approximate quantities to be used for the purpose of comparing bids. The actual quantities may vary. It is further understood that the actual amount of the Agreement, and payments there under, will be based upon the actual quantities placed into the work.

5. Bidder agrees that the work will be completed in accordance with the following timeframe. The CONTRACTOR shall be Substantially Complete with the work within One Hundred Eighty (180) calendar days from the date of Notice of Proceed, in accordance with Paragraph 2.03 of the General Conditions as amended by Supplementary Conditions, and be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions as amended by Supplementary Conditions within Two Hundred and Ten (210) calendar days after the issuance of the Notice to Proceed.

6. The following documents are attached to and made a part of this Bid:

- (a) Instructions to Bidders (Section 00200)
- (b) Certificates of Insurance (included in Section 00800 Supplementary Conditions).
- (b) Certificate of Compliance with the Florida Trench Safety Act (Section 00480).
- (c) Schedule of Subcontractors (Section 00431).
- (d) Schedule of Suppliers (Section 00450).
- (e) Disclosure of Relationships (Section 00452).
- (f) Confirmation of a Drug-Free Workplace (Section 00454).
- (g) Non-Collusive Affidavit (Section 00455).
- (h) General Information Required of Bidders (Section 00456).
- (i) Schedule of Alternate Suppliers (Section 00460).
- (j) Certification Regarding Prohibition Against Contracting with Scrutinized Companies (Section 00470)

7. The terms used in this Bid, which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents, have the meanings assigned to them in the General Conditions. CONTRACTOR acknowledges the insurance requirements of Section 00700 as amended by Section 00800 and any other addendums and agrees to provide said insurance upon award of contract.

**Indian River County
Solid Waste Disposal District
Segment 3 Cell 1 Landfill Gas System Expansion
Schedule of Bid Items**

Item (Note 1)	Unit	Estimated Quantity (Notes 6, 7)	Unit Price	Total
BID ITEMS:				
1. SEGMENT 3 CELL 1 LANDFILL GAS SYSTEM EXPANSION				
1A. Site Work				
a. Site Preparation	L.S.	1		
b. Landfill Gas Collection Piping Installation (Note 3)				
b.1. 24-inch SDR 17 HDPE Solid Pipe and Fittings	L.F.	170		
b.2. 18-inch SDR 17 HDPE Solid Pipe and Fittings	L.F.	930		
b.3. 12-inch SDR 17 HDPE Solid Pipe and Fittings	L.F.	520		
b.4. 8-inch SDR 17 HDPE Solid Pipe and Fittings	L.F.	170		
b.5. 6-inch SDR 17 HDPE Solid Pipe and Fittings	L.F.	1,900		
b.6. 4-inch SDR 17 HDPE Solid Pipe and Fittings	L.F.	320		
c. Vertical Extraction Well (Note 4)	V.F.	1,050		
d. Sideslope Collector				
d.1. Sideslope collector 40 mil textured HDPE geomembrane	S.F.	12,000		
d.2. Sideslope collector 6-inch SDR 11 HDPE solid pipe and fittings in rock (Note 5)	L.F.	200		
d.3. Sideslope collector 6-inch SDR 11 HDPE solid pipe and fittings in common fill (Note 5)	L.F.	3,000		
d.4. Sideslope collector 6-inch SDR 11 HDPE perforated pipe and fittings in rock (Note 5)	L.F.	3,000		
e. Landfill Gas Appurtenances and Fittings				
e.1. Well Head	Ea.	38		
e.2. Miscellaneous Valves and Fittings	L.S.	1		
e.3. Access Riser with Fernco Cap	Ea.	12		
e.4. Zone Valve	Ea.	6		
f. Compressed Air and Force Main Piping, Fittings, Valves, and Ancillary Components				
f.1. 2-inch SDR 11 HDPE Compressed Air & Condensate Force Main Pipe (same trench as LFG pipe) (Note 3)	L.F.	3,400		
f.2. 2-inch Compressed Air and Force Main Valves Assembly	Ea.	6		
f.3. Well Dewatering Pump Assembly	Ea.	14		
f.4. Well Dewatering Pump Installation	Ea.	14		
g. Miscellaneous	L.S.	1		
1B. Survey (Note 8)	L.S.	1		
TOTAL BID ITEM 1				
2. PUBLIC CONSTRUCTION BOND AND INSURANCE (TOTAL)				
	L.S.	1		
3. MOBILIZATION AND DEMOBILIZATION (TOTAL) (Note 2)				
	L.S.	1		
4. CONTINGENCY ALLOWANCE (10% of sum of Bid Items 1, 2, and 3)				
	L.S.	1		
GRAND TOTAL BID				
5. ALTERNATE BID ITEM 1 – ACCESS RISERS WITH BLIND FLANGE CAP (Note 9)				
	Ea.	12		

SCHEDULE OF BID ITEMS

Notes:

1. All items shall include the cost for materials, installation, labor, testing, startup and training to complete the work as required in the applicable Construction Drawings and Technical Specifications.
2. Mobilization/Demobilization (Item 3) shall include any partial demobilization required for all components of construction specified herein and in the Construction Drawings and Technical Specifications.
3. Includes excavation, trenching, bedding, backfill, and compaction required to install landfill gas piping.
4. Price per vertical foot drilled based on well drilling logs that are reviewed and approved by Engineer.
5. Includes excavation, trenching, bedding, backfill, and compaction required to install the sideslope collector.
6. Quantities presented herein are estimated quantities and shall be verified by Contractor. If quantities are found to be significantly different, Contractor shall notify Engineer.
7. Quantities not provided shall be estimated and verified by Contractor. Payment shall be made on surveyed and calculated quantities in accordance with the Technical Specifications.
8. The survey activities (All Bid Items) shall include surveying of existing conditions prior to construction; surveying for all pipe alignment; as-built surveys of all piping, horizontal and vertical wells, gas header pipes, condensate and compressed air lines and all items identified in Section 017300; a final survey and any surveying needed throughout the duration of the project.
9. Contractor to provide an alternate bid price per unit for the additional cost to install a welded blind flange with bolt on cap instead of a Fernco cap. If the Alternate Bid Item 1 is elected by the Owner, it will be added to the final contract price.

All bid items shall include costs for furnishing to the Owner all materials, equipment, and supplies and for all costs incurred in completing the work including installation of all materials, equipment, and supplies furnished, complete in place and ready for continued service, all other labor, taxes, insurance, miscellaneous costs, overhead, and profit.

NOTE: Contingencies Definitions - Contingencies shall be bid in an amount equal to 10 percent (10%) of the sum of the Bid Items Nos. 1, 2, and 3. The amount bid for contingencies shall only be paid for in the event change orders are needed and approved by Indian River County for unforeseen work in conformance with this contract. The amounts to be paid for by Owner under contingencies shall not exceed the value of the approved change orders.

I have attached the required 5 percent (5%) Bid Security to this Bid.

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November 2020

BIDDER INFORMATION:

SUBMITTED ON: _____ (DATE)

SUBMITTED BY: _____ (NAME OF BIDDER)

_____ (STREET ADDRESS)

_____ (CITY, STATE, ZIP)

_____ (PHONE #)

_____ (FAX #)

_____ (E-MAIL)

_____ (FEDERAL ID #)

_____ (FLORIDA LICENSE #)

SIGNED BY: _____ (PRINTED NAME)

(SIGNATURE) _____ (TITLE)

Note: If the Bidder is a corporation, indicate State of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses, if different from business address.

END OF SECTION 00300

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SECTION 00431
SCHEDULE OF SUBCONTRACTORS

PLEASE LIST ALL SUBCONTRACTORS ANTICIPATED TO RECEIVE \$10,000 (TEN THOUSAND DOLLARS) OR MORE OF WORK UNDER THIS PROJECT, INCLUDING NAME; ADDRESS; SPECIALTY; AND LICENSE TYPE AND NUMBER

NAME & ADDRESS

TYPE OF WORK

Total dollar amount that will be awarded to Sub-contractors AND INCLUDED IN THE TOTAL AMOUNT OF THE BID: \$ _____

NOTE: The above Schedule of Subcontractors must be submitted with the Bid Form and will become a part of the Contract Documents.

END OF SECTION 00431

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SECTION 00450
SCHEDULE OF SUPPLIERS

The Contract Documents are based upon the equipment or products available from the Suppliers denoted as "A", "B", etc. Provision will be made in the Contract Documents for alternate suppliers whose equipment or product may be deemed equivalent in quality (see Paragraph 6.05 of the General Conditions). However, the Bidder must indicate in his Bid which supplier the Bidder intends to use for each item of equipment listed on this form by circling one of the listed suppliers. Should a Bidder fail to circle a named item in each category, or if he circles more than one listed supplier, he hereby agrees to provide the item listed as "A."

If the Bidder desires to propose one or more alternate suppliers, he may write in the name of such alternates in the spaces provided in Section 00460 (Alternate Suppliers), but he must nevertheless also circle one of the listed suppliers.

If the proposed alternate supplier is determined "not equivalent" by the ENGINEER, the Bidder must use the circled supplier. If the Bidder fails to indicate which listed supplier the Bidder intends to use if an alternate is rejected, the Bidder must use the supplier listed as "A". Also, if the Bidder circles more than one listed supplier, he must use the first supplier circled (unless an alternate is approved). Each proposed alternate will be evaluated in accordance with Paragraph 6.05 of the General Conditions.

The OWNER may request and the Bidder shall supply complete information on proposed alternates prior to the Notice of Award.

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SECTION 00450
SCHEDULE OF SUPPLIERS

INDIAN RIVER COUNTY BID NO.: 2021006

BIDDER: _____

Circle the selected bid or supplier for each item:

<u>ITEM</u>	<u>EQUIPMENT ITEM OR MATERIAL</u>	<u>SELECTED BID OR SUPPLIER</u>
1.	Geosynthetics	A. Solmax/GSE B. Skaps Industries C. Agru America
2.	HDPE Pipe	A. ISCO Industries B. Performance Pipe
3.	Landfill Gas Valves	A. Asahi America Inc.
4.	Landfill Gas Wellheads	A. QED Environmental Systems, Inc. B. CB&I/LFG Specialties, LLC
5.	Well Dewatering Pump Assembly	A. QED Environmental Systems, Inc.
6.	PVC Pipe	A. Diamond Plastics B. ETI Pipe and Supply C. Freedom Plastics

After receipt of Bids, the CONTRACTOR may not substitute any Supplier circled above except as permitted under the Contract Documents.

END OF SECTION 00450

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SECTION 00452
DISCLOSURE OF RELATIONSHIPS

**SWORN STATEMENT UNDER SECTION 105.08, INDIAN RIVER COUNTY CODE, ON
DISCLOSURE OF RELATIONSHIPS**

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER
AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement MUST be submitted with Bid, Proposal or Contract No. _____
for _____

2. This sworn statement is submitted by: _____

(Name of entity submitting Statement)

whose business address is:

3. My name is _____
(Please print name of individual signing)

and my relationship to the entity named above is _____

4. I understand that an “affiliate” as defined in Section 105.08, Indian River County Code, means:

The term “affiliate” includes those officers, directors, executives, partners, shareholders,
employees, members, and agents who are active in the management of the entity.

5. I understand that the relationship with a County Commissioner or County employee that must be
disclosed as follows:

Father, mother, son, daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, husband, wife,
father-in-law, mother-in-law, daughter-in-law, son-in-law, brother-in-law, sister-in-law, stepfather,
stepmother, stepson, stepdaughter, stepbrother, stepsister, half-brother, half-sister, grandparent, or
grandchild.

6. Based on information and belief, the statement, which I have marked below, is true in relation to the
entity submitting this sworn statement. [Please indicate which statement applies.]

_____ Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners,
shareholders, employees, members, or agents who are active in management of the entity, have any
relationships as defined in section 105.08, Indian River County Code, with any County
Commissioner or County employee.

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_____ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents, who are active in management of the entity have the following relationships with a County Commissioner or County employee:

Name of Affiliate or entity	Name of County Commissioner or employee	Relationship
_____	_____	_____
_____	_____	_____
_____	_____	_____

(Signature)

(Date)

STATE OF _____

COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of physical presence or online notarization, this _____ day of 20____, by _____ (name of person making statement).

(Signature of Notary Public - State of Florida)

(Print, Type, or Stamp Commissioned Name of Notary Public)

who is personally known to me or who has produced _____ as identification.

END OF SECTION 00452

SECTION 00454
CONFIRMATION OF DRUG-FREE WORKPLACE

IDENTICAL TIE BIDS: Preference shall be given to businesses with drug free workplace programs. Whenever two or more bids which are equal with respect to price, quantity, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug free workplace program (Florida Statutes Section 287.087 Florida Statutes).

In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibitions.
2. Inform employees about the dangers of drug abuse in the workplace, the business’s policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or Contractual services that are under Bid a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employee that, as a condition of working on the commodities or Contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 Florida Statutes or of any controlled substance law of the United States or any State, for a violation occurring in the workplace no later than five (5) days after the conviction.
5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee’s community by, any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

A signed copy of your Drug-Free Workplace Policy must be attached to this signed copy and submitted with the Bid Documents.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

BY: _____

TITLE: _____

END OF SECTION 00454

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SECTION 00455
NON-COLLUSIVE AFFIDAVIT

State of Florida

County of _____

_____ being first duly sworn, deposes and says that:

BIDDER is the _____
(Owner, Partner, Officer, Representative, or Agent)

BIDDER is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

Such Bid is genuine and is not a collusive or sham Bid;

Neither the said Bidder nor any of its officers, partners, OWNERS, agents, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm, or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted; or to refrain from bidding in connection with such Contract; or have in any manner, directly or indirectly, sought by agreement or collusion, or communication, or conference with any Bidder, firm, or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit, or cost elements of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against COUNTY, or any person interested in the proposed Contract;

The price of items quoted in the attached Bid are fair and proper and are not tainted by collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any other of its agents, representatives, OWNERS, employees, or parties in interest.

BY: _____

STATE OF _____

COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of physical presence or online notarization, this _____ day of 20____, by _____ (name of person making statement).

(Signature of Notary Public - State of Florida)

(Print, Type, or Stamp Commissioned Name of Notary Public)

who is personally known to me or who has produced _____ as identification.

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END OF SECTION 00455

SECTION 00456
GENERAL INFORMATION REQUIRED OF BIDDERS

The undersigned Bidder guarantees the truth and accuracy of all statements and answers herein contained. Failure to comply with these requirements may be considered sufficient justification to disqualify a Bidder. Additional sheets shall be attached as required.

Documentation Submitted with Indian River County Bid No: 2021006 for the Indian River County, Solid Waste Disposal District, Indian River County Landfill, Segment 3 Cell 1 Landfill Gas System Expansion.

1. How many years has your organization been in business as a General Contractor?

2. Describe and give the date and owner of the last project that you have completed similar in type, size, and nature as the one proposed?

3. Have you ever failed to complete work awarded to you? If so, where and why?

4. Name three individuals or corporations for which you have performed work and to which you refer:

5. Name of person who inspected site or proposed work for your firm:

Name: _____ Date of Inspections: _____

Describe any anticipated problems with the site and your proposed solutions:

6. Will you Subcontract any part of this Work? If so, describe which portions:

7. Please list the names and addresses of the subcontractors to be used for the portions of the work listed below. Additional information will be required in accordance with the Instructions to Bidders (Section 00100).

MECHANICAL: _____

CIVIL SITE WORK: _____

LANDFILL GAS WELL DRILLER: _____

SURVEYING: _____

TESTING LAB: _____

8. What equipment do you own that is available for the work?

9. What equipment will you purchase for the work?

10. What equipment will you rent for the work?

11. Florida General Contractor's License No: _____

12. The following is given as a summary of the Financial Statement of the undersigned: (List Assets and Liabilities and use insert sheet if necessary.)

13. List the names and titles of ALL officers of Contractor's firm:

_____	_____
_____	_____
_____	_____

14. State the true and exact, correct, and complete name under which you do business. BIDDER is:
A CORPORATION

(Corporation Name)

(State of Incorporation)

15. State your total bonding capacity:

16. State your bonding capacity per job.

17. Please provide name, address, telephone number, and contact person of your bonding company.

NOTE: If requested by the County, the Bidder shall furnish a notarized financial statement, references and other information, sufficiently comprehensive to permit an appraisal of his current financial condition.

END OF SECTION 00456

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SECTION 00460
ALTERNATE SUPPLIERS

Bidder proposes the following alternate manufacturers/suppliers for the equipment or material categories so identified:

	<u>Equipment Item or Material</u>	<u>Drawing No.</u>	<u>Spec. Section</u>	<u>Alternate Supplier (List One Only)</u>	<u>Deduct Amount</u>
1.	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____
7.	_____	_____	_____	_____	_____
8.	_____	_____	_____	_____	_____
9.	_____	_____	_____	_____	_____
10.	_____	_____	_____	_____	_____
11.	_____	_____	_____	_____	_____
12.	_____	_____	_____	_____	_____
13.	_____	_____	_____	_____	_____
14.	_____	_____	_____	_____	_____
15.	_____	_____	_____	_____	_____

END OF SECTION 00460

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SECTION 00470
CERTIFICATION REGARDING PROHIBITION AGAINST CONTRACTING WITH SCRUTINIZED
COMPANIES

I hereby certify that neither the undersigned entity, nor any of its wholly owned subsidiaries, majority-owned subsidiaries, parent companies, or affiliates of such entities or business associations, that exists for the purpose of making profit have been placed on the Scrutinized Companies that Boycott Israel List created pursuant to s. 215.4725 of the Florida Statutes, or are engaged in a boycott of Israel.

In addition, if this solicitation is for a contract for goods or services of one million dollars or more, I hereby certify that neither the undersigned entity, nor any of its wholly owned subsidiaries, majority-owned subsidiaries, parent companies, or affiliates of such entities or business associations, that exists for the purpose of making profit are on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to s. 215.473 of the Florida Statutes, or are engaged in business operations in Cuba or Syria as defined in said statute.

I understand and agree that the County may immediately terminate any contract resulting from this solicitation upon written notice if the undersigned entity (or any of those related entities of respondent as defined above by Florida law) are found to have submitted a false certification or any of the following occur with respect to the company or a related entity: (i) it has been placed on the Scrutinized Companies that Boycott Israel List, or is engaged in a boycott of Israel, or (ii) for any contract for goods or services of one million dollars or more, it has been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or it is found to have been engaged in business operations in Cuba or Syria.

Name of Respondent: _____

By: _____
(Authorized Signature)

Title: _____

Date: _____

END OF SECTION 00470

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SECTION 00480
SWORN STATEMENT UNDER THE FLORIDA TRENCH SAFETY ACT

THIS FORM MUST BE SIGNED BY THE BIDDER WHO WILL BE RESPONSIBLE FOR THE EXCAVATION WORK ("BIDDER"), OR ITS AUTHORIZED REPRESENTATIVE, IN THE PRESENCE OF A NOTARY PUBLIC AUTHORIZED TO ADMINISTER OATHS.

1. This Sworn Statement is submitted with Project No. _____ for _____

 (Name of Project)
2. This Sworn Statement is submitted by _____

 (Legal Name of Entity Submitting Sworn Statement)
 _____, hereinafter
 "BIDDER". The BIDDER's address is _____

 BIDDER's Federal Employer Identification Number (FEIN) is _____.
3. My name is _____ and my relationship to the BIDDER
 (Print Name of Individual Signing)
 is _____
 (Position or Title)
 I certify, through my signature at the end of this Sworn Statement, that I am an authorized representative of the BIDDER.
4. The Trench Safety Standards that will be in effect during the construction of this Project are contained within the Trench Safety Act, Section 553.60 et.seq. Florida Statutes and refer to the applicable Florida Statute(s) and/or OSHA Regulation(s) and include the "effective date" in the citation(s). Reference to and compliance with the applicable Florida Statute(s) and OSHA Regulation(s) is the complete and sole responsibility of the BIDDER. Such reference will not be checked by OWNER or ENGINEER and they shall have no responsibility to review or check the BIDDER's compliance with the Trench Safety Standards.
5. The BIDDER assures the OWNER that it will comply with the applicable Trench Safety Standards.
6. The BIDDER has allocated and included in its bid the total amount of \$ _____, based on the linear feet of trench to be excavated over five (5) feet deep, for compliance with the applicable Trench Safety Standards, and intends to comply with said standards by instituting the following specific method(s) of compliance on this Project: _____

The determination of the appropriate method(s) of compliance is the complete and sole responsibility of the BIDDER. Such methods will not be checked by the OWNER or ENGINEER for accuracy, completeness, or any other purpose. The OWNER and ENGINEER shall have no responsibility to review or check the BIDDER's compliance with the Trench Safety Standards.

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- 7. The BIDDER has allocated and included in its bid the total amount of \$ _____ based on the square feet of shoring to be used for compliance with shoring safety requirements and intends to comply with said shoring requirements by instituting the following specific method(s) of compliance on this Project: _____

The determination of the appropriate method(s) of compliance is the complete and sole responsibility of the BIDDER. Such methods will not be checked by the OWNER or ENGINEER for accuracy, completeness or any other purpose. The OWNER and ENGINEER shall have no responsibility to review or check the BIDDER's compliance with the Trench Safety Standards.

- 8. The BIDDER, in submitting this bid, represents that it has obtained and considered all available geotechnical information, has utilized said geotechnical information and that, based on such information and the BIDDER's own information, the BIDDER has sufficient knowledge of the Project's surface and subsurface site conditions and characteristics to assure BIDDER's compliance with the applicable Trench Safety Standards in designing the trench safety system(s) for the Project.

BIDDER: _____

By: _____

Position or Title: _____

Date: _____

STATE OF _____

COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of physical presence or online notarization, this ____ day of 20____, by _____ (name of person making statement).

(Signature of Notary Public - State of Florida)

(Print, Type, or Stamp Commissioned Name of Notary Public)

who is personally known to me or who has produced _____ as identification.

END OF SECTION 00480

Indian River County

Solid Waste Disposal District

Indian River County Landfill Segment 3 Cell 1 Landfill Gas System Expansion

IRC Bid Number 2021006

SECTION 00530 - EJCDC
STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR ON THE BASIS OF A STIPULATED PRICE

THIS AGREEMENT (“Agreement” or “Contract”), dated _____, 2021 by and between Indian River County Solid Waste Disposal District (SWDD), a special dependent district of Indian River County (IRC), a political subdivision of the State of Florida (“OWNER” or “SWDD”) and _____ (“CONTRACTOR”).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 WORK

1.1 CONTRACTOR as an independent contractor and not as an employee shall furnish and complete all of the necessary labor, material, and equipment to perform the work as specified or indicated in the Contract Documents. The work is generally described as follows:

- A. The Work shall include but is not necessarily limited to the following:
 - 1. Bid Item No. 1. Segment 3 Cell 1 Landfill Gas System Expansion:
 - a. Site Preparation.
 - b. Landfill Gas Collection Piping and Installation
 - c. Vertical Extraction Wells
 - d. Sideslope Collectors
 - e. Landfill Gas Appurtenances and Fittings
 - f. Compressed Air and Force Main Piping, Fittings, Valves, and Ancillary Components.
 - g. Survey
 - 2. Bid Item No. 2. Public Construction Bond and Insurance.
 - 3. Bid Item No. 3. Mobilization and Demobilization.
 - 4. Bid Item No. 4. Contingency Allowance at OWNER’s Discretion. (10 percent of total of Bid Items 1 through 3.)

ARTICLE 2 ENGINEER

2.1 The project has been designed by CDM Smith Inc., hereinafter called ENGINEER, and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the work in accordance with the Contract Documents.

ARTICLE 3 CONTRACT TIME

3.1 The CONTRACTOR shall be substantially completed with the work of Milestone 1 within One Hundred Eighty (180) calendar days from the date of Notice of Proceed, in accordance with Paragraph 2.03 of the General Conditions as amended by the Supplementary Conditions, and be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions as amended by the Supplementary Conditions within Two Hundred Ten (210) calendar days after the issuance of the Notice to Proceed.

3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the work is not completed within the times specified in Paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by OWNER if the work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER: (a) Four hundred and fifty dollars (\$450.00) for each day that expires after the time specified in Paragraph 3.1 for Substantial Completion of the work of the project and (b) four hundred dollars (\$400.00) for each day that expires after the time specified in Paragraph 3.1 for completion and readiness for final payment or use of each section of the project.

ARTICLE 4 CONTRACT PRICE

4.1 OWNER shall pay CONTRACTOR for completion of the work in accordance with the Contract Documents in current funds in the amount of \$_____.

ARTICLE 5 PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions as amended by the Supplementary Conditions. Applications for Payment will be processed as provided in the General Conditions as amended by the Supplementary Conditions and the Contract Documents.

5.1 Progress Payments. The OWNER shall make progress payments to the CONTRACTOR on the basis of the approved partial payment request as recommended by ENGINEER in accordance with the provisions of the Local Government Prompt Payment Act, Florida Statutes section 218.70 et. seq. The OWNER shall retain five percent (5%) of the payment amount due to CONTRACTOR until final completion and acceptance of all work to be performed by CONTRACTOR under the Contract Documents.

5.2 Pay Requests. Each request for a progress payment shall contain the CONTRACTOR'S certification. All progress payments will be on the basis of progress of the work measured by the schedule of values established, or in the case of unit price work based on the number of units completed.

- 5.3 Paragraphs 5.1 and 5.2 do not apply to construction services work purchased by the County/SWDD as OWNER which are paid for, in whole or in part, with federal funds and are subject to federal grantor laws and regulations or requirements that are contrary to any provision of the Local Government Prompt Payment Act. In such event, payment and retainage provisions shall be governed by the applicable grant requirements and guidelines.
- 5.4 ACCEPTANCE AND FINAL PAYMENT: Upon receipt of written notice that the work is ready for final inspection and acceptance, the ENGINEER will promptly make such inspection and when the ENGINEER finds the work acceptable under the terms of the Contract and the Contract fully performed, the ENGINEER will promptly issue a final completion certificate stating that the work provided for in this Contract has been completed, and acceptance by the OWNER under the terms and the conditions thereof is recommended and the entire balance found to be due the CONTRACTOR, will be paid to the CONTRACTOR by the OWNER following SWDD Board approval of the final Contract payment.
- 5.5 Acceptance of Final Payment as Release. The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER from all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with the work under this Contract and for every act and neglect of the OWNER and others relating to or arising out of the work. Any payment, however, final or otherwise, shall not release the CONTRACTOR or its sureties from any obligations under the Contract Documents or the Payment and Performance Bonds.

ARTICLE 6 INTEREST

Not Applicable.

ARTICLE 7 CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

- 7.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing of the work.
- 7.2 CONTRACTOR has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in Paragraph 4.02 of the General Conditions as amended by the Supplementary Conditions, and accepts the determination set forth in Paragraph SC-4.02 of the Supplementary Conditions of the extent of the technical data contained in such reports and drawings upon which CONTRACTOR is entitled to rely.
- 7.3 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in Paragraph 7.2 above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the work as CONTRACTOR considers necessary for the performance of furnishing of the work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Paragraph 4.02 of the General Conditions; and no additional examinations, investigations,

explorations, tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.

- 7.4 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing underground facilities at or contiguous to the site and assumes responsibility for the accurate location of said underground facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said underground facilities are or will be required by CONTRACTOR in order to perform and furnish the work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Paragraph 4.04 of the General Conditions.
- 7.5 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.
- 7.6 CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

ARTICLE 8 CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the work consist of the following:

- 8.1 This Agreement (Section 00530).
- 8.2 Public Construction Bond (Section 00610).
- 8.3 Notice of Award and Notice to Proceed (examples in Section 00800).
- 8.4 General Conditions (Section 00700).
- 8.5 Supplementary Conditions (Section 00800).
- 8.6 Specifications bearing the title "INDIAN RIVER COUNTY LANDFILL SEGMENT 3 CELL 1 LANDFILL GAS SYSTEM EXPANSION" as listed in the table of contents hereof.
- 8.7 Drawings, inclusive with each sheet bearing the following general title: "INDIAN RIVER COUNTY LANDFILL SEGMENT 3 CELL 1 LANDFILL GAS SYSTEM EXPANSION".
- 8.8 Addenda numbers _____ to _____, inclusive.
- 8.9 CONTRACTOR's Bid Form (Section 00300) and all attachments thereto:
- (a) Certificates of Insurance (included in Section 00800 Supplementary Conditions).
 - (b) Certificate of Compliance with the Florida Trench Safety Act (Section 00480).
 - (c) Schedule of Subcontractors (Section 00450).
 - (d) Disclosure of Relationships (Section 00452).
 - (e) General Information Required of Bidders (Section 00456).
 - (f) Schedule of Alternate Suppliers (Section 00460).
 - (g) Confirmation of a Drug-Free Workplace (Section 00454).
 - (h) Non-Collusive Affidavit (Section 00455).

(i) Certification Regarding Prohibition Against Contracting with Scrutinized Companies (Section 00470)

8.10 The following, which may be delivered or issued after the effective date of the Agreement and are not attached hereto: All written amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to Paragraphs 3.04 of the General Conditions.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in Paragraphs 3.04 of the General Conditions.

ARTICLE 9 MISCELLANEOUS

9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

9.2 It is agreed that the CONTRACTOR shall not assign, transfer, convey, or otherwise dispose of the contract or its right, title, or interest in or to the same or any part thereof, or allow legal action to be brought in its name for the benefit of others, without previous consent of the OWNER and concurred to by the sureties. Any attempted assignment shall be void and may, at the option of the OWNER be deemed an event of default hereunder. Nothing herein shall be construed as creating any personal liability on the part of any officer or agent of the OWNER who may be a party hereto.

9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

9.4 The CONTRACTOR shall be properly licensed to practice its trade or trades which are involved in the completion of this Agreement and the work thereunder.

9.5 This Agreement shall be governed by the laws of the State of Florida. Venue for any lawsuit brought by either party against the other party or otherwise arising out of this agreement shall be in Indian River County, Florida, or, in the event of federal jurisdiction, in the United States District Court for the Southern District of Florida.

9.6 CONTRACTOR agrees to defend, hold harmless and indemnify the OWNER, including its commissioners, officers, employees, agents and engineers, from all claims, liabilities, damages, losses and expenses, including, but not limited to, reasonable attorney's fees, to the extent caused by negligence, recklessness, intentional misconduct, breach of this agreement or breach of applicable law by the CONTRACTOR or persons employed or utilized by the CONTRACTOR in the performance of this Agreement. This provision shall survive the termination or expiration of this Agreement. Indemnification hereunder shall be limited to \$5 million per occurrence.

9.7 Pledge of Credit. The CONTRACTOR shall not pledge the OWNER's credit or make it a guarantor of payment or surety for any Agreement, debt, obligation, judgment, lien or any form of indebtedness. The CONTRACTOR further warrants and represents that it has no obligation of indebtedness that would impair its ability to fulfill the terms of this Agreement.

9.8 Counterparts. This Agreement may be executed in one or more counterparts, but all such counterparts, when duly executed, shall constitute one and the same Agreement.

9.9 Public Records Compliance.

A. Indian River County is a public agency subject to Chapter 119, Florida Statutes. The Contractor shall comply with Florida's Public Records Law. Specifically, the Contractor shall:

- (1) Keep and maintain public records required by the County to perform the service.
- (2) Upon request from the County's Custodian of Public Records, provide the County with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119 or as otherwise provided by law.
- (3) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the contractor does not transfer the records to the County.
- (4) Upon completion of the contract, transfer, at no cost, to the County all public records in possession of the Contractor or keep and maintain public records required by the County to perform the service. If the Contractor transfers all public records to the County upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the County, upon request from the Custodian of Public Records, in a format that is compatible with the information technology systems of the County.

B. IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:

(772) 226-1424

publicrecords@ircgov.com

Indian River County Office of the County Attorney

1801 27th Street

Vero Beach, FL 32960

C. Failure of the Contractor to comply with these requirements shall be a material breach of this Agreement.

ARTICLE 10 DIRECT PURCHASE PROCEDURES

- 10.1 Administrative guidelines governing the taxability of materials purchased for public works contracts, such as the Project under these Contract Documents, are contained in Rule 12A-1.094, Florida Administrative Code.
- 10.2 The exemption in Florida Statutes Section 212.08(6) is a general exemption for sales made directly to the government. A determination whether a particular transaction is properly characterized as an exempt sale to a governmental entity or a taxable sale to or use by a contractor shall be based on the substance of the transaction, rather than the form in which the transaction is cast. The determination of whether the substance of a particular transaction is a taxable sale to or use by a contractor or an exempt direct sale to a governmental entity, based on all of the facts and circumstances surrounding the transaction as a whole, is ultimately made by the Florida Department of Revenue.
- 10.3 The conditions that must be met to satisfy the requirements of Rule 12A-1.094, Florida Administrative Code, and establish that Indian River County SWDD as OWNER rather than the CONTRACTOR is the purchaser of materials, include:
- (1) Direct Purchase Order. Indian River County SWDD as OWNER must execute the purchase orders for the tangible personal property involved in the contract, which must include the County's consumer's certificate of exemption number. The CONTRACTOR may present the County's purchase orders to the vendors of the tangible personal property.
 - (2) Passage of Title. The Indian River County SWDD as OWNER must acquire title to and assume liability for the tangible personal property at the point in time when it is delivered to the job site up until the time it is incorporated as real property.
 - (3) Direct Invoice. Vendors must directly invoice Indian River County SWDD as OWNER for supplies.
 - (4) Direct Payment. Indian River County SWDD as OWNER must directly pay the vendors for the tangible personal property; and direct purchase cost plus all applicable tax will be deducted from CONTRACTOR's lump sum contract amount.
 - (5) Assumption of the Risk of Loss. Indian River County SWDD as OWNER must assume all risk of loss or damage for the tangible personal property involved in the contract, as indicated by the County's acquisition of, or inclusion as the insured party under, insurance on the building materials.
- 10.4 Indian River County SWDD as OWNER desires to comply with the Direct Purchase Procedures set forth in this Article 10 for allowable purchases in an amount in excess of \$5,000 (Five Thousand Dollars). CONTRACTOR agrees to cooperate with OWNER to enable OWNER to comply with the Direct Purchase Procedures set forth in this Article 10 for all such purchases. Whenever the Contract Documents conflict with the direct purchase procedures set forth in this Article 10, this Article 10 shall prevail. OWNER and CONTRACTOR shall coordinate the builder's risk coverage of each party to comply with the Direct Purchase Procedures set forth herein for such purchases.
- 10.5 Upon delivery of OWNER direct purchase materials to the Project site, the CONTRACTOR shall, pursuant to the Contract Documents, inspect, accept delivery of, and store OWNER direct purchase materials pending incorporation into the Project. CONTRACTOR shall forward proof of delivery acceptance to the OWNER's Project Manager. Notwithstanding the transfer of possession of OWNER direct purchase materials to the CONTRACTOR, Indian River County SWDD as OWNER retains title

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to the OWNER direct purchase materials and the transfer of possession shall be deemed a bailment until the OWNER direct purchase materials are incorporated into the Project.

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IN WITNESS WHEREOF, OWNER AND CONTRACTOR have signed this Agreement the day and year first written above.

This Agreement will be effective on _____, _____.

CONTRACTOR

By: _____

Attest: _____
(CORPORATE SEAL)

OWNER

Indian River County
Solid Waste Disposal District

By _____
Joseph E. Flescher, Chairman

Attest: Jeffery R. Smith, Clerk

By _____
Deputy Clerk

Approved By:

Jason E. Brown, County Administrator

Approved as to Form and Legal Sufficiency:

Dylan Reingold, County Attorney

END OF SECTION 00530

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SECTION 00610
PUBLIC CONSTRUCTION BOND

INSTRUCTION FOR PUBLIC CONSTRUCTION BOND

The front or cover page to the required public construction payment and performance bond shall contain the information required by Fla. Stat. 255.05(1)(a), and be substantially in the format shown on the first page following this instruction.

The Public Construction Bond shall be in the form suggested by Fla. Stat. 255.05(3) as shown on the second page following this instruction.

A Power of Attorney from a surety insurer authorized to do business in Florida, authorizing the signature of the Attorney in Fact who executes the Public Construction Bond shall accompany that Bond.

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**Public Work
F.S. Chapter 255.05 (1)(a)
Cover Page**

THIS BOND IS GIVEN TO COMPLY WITH SECTION 255.05 OR SECTION 713.23 FLORIDA STATUTES, AND ANY ACTION INSTITUTED BY A CLAIMANT UNDER THIS BOND FOR PAYMENT MUST BE IN ACCORDANCE WITH THE NOTICE AND TIME LIMITATION PROVISIONS IN SECTION 255.05(2) OR SECTION 713.23 FLORIDA STATUTES.

BOND NO: _____

CONTRACTOR NAME: _____

CONTRACTOR ADDRESS: _____

CONTRACTOR PHONE NO: _____

SURETY COMPANY NAME: _____

**SURETY PRINCIPAL
BUSINESS ADDRESS:** _____

SURETY PHONE NO: _____

OWNER NAME: _____ Indian River County Board of County Commissioners

OWNER ADDRESS: _____ 1800 27th Street
_____ Vero Beach, FL 32960

OWNER PHONE NO: _____ 772-226-1416

OBLIGEE NAME: _____
(If contracting entity is different from the owner, the contracting public entity)

OBLIGEE ADDRESS: _____ 1800 27th Street
_____ Vero Beach, FL 32960

OBLIGEE PHONE NO: _____ 772-226-1416

BOND AMOUNT: _____

CONTRACT NO: _____ IRC Bid No. 2021006
(If applicable)

DESCRIPTION OF WORK: Construction of the Segment 3 Cell 1 Landfill Gas System Expansion. This project is to include, but not limited to, mobilization/demobilization, site work, excavation, filling, construction of landfill vertical and horizontal gas collection wells, gas piping, valves, condensate pumps, condensate piping, and air piping.

PROJECT LOCATION: 1325 74th Ave. SW, Vero Beach, FL 32968.

LEGAL DESCRIPTION: _____
(If applicable)

FRONT PAGE

All other bond page(s) are deemed subsequent to this page regardless of any page number(s) that may be printed thereon.

PUBLIC CONSTRUCTION BOND

Bond No. _____
(enter bond number)

BY THIS BOND, We _____, as Principal and _____, _____ a corporation, as Surety, are bound to _____, herein called Owner, in the sum of \$ _____, for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the contract dated _____, _____, between Principal and Owner for construction of _____, the contract being made a part of this bond by reference, at the times and in the manner prescribed in the contract; and
2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the contract; and
3. Pays Owner all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains because of a default by Principal under the contract; and
4. Performs the guarantee of all work and materials furnished under the contract for the time specified in the contract, then this bond is void; otherwise it remains in full force.

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes.

Any changes in or under the contract documents and compliance or noncompliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond.

DATED ON _____,

(Name of Principal)

By _____
(As Attorney in Fact)

(Name of Surety)

END OF SECTION 00610

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This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

**STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT**

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

Associated General Contractors of America
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

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STANDARD GENERAL CONDITIONS OF THE
CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.
 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. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer 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, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or 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. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
 12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
 13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
 14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
 15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
 16. *Cost of the Work*—See Paragraph 11.01 for definition.
 17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be

- performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
 19. *Engineer*—The individual or entity named as such in the Agreement.
 20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
 21. *General Requirements*—Sections of Division 1 of the Specifications.
 22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
 23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
 24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
 25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
 26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
 27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
 28. *Notice to Proceed*—A written notice given 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 under the Contract Documents.
 29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
 30. *PCBs*—Polychlorinated biphenyls.
 31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
 32. *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.
 33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
 34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
 35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
 36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
 37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work

- and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
 39. *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.
 40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
 41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
 42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
 43. *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 at the Site.
 44. *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.
 45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
 46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
 47. *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 Subcontractor.
 48. *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 those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
 49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
 50. *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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
 51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its

effect, if any, on the Contract Price or Contract Times.

test, or approval referred to in the Contract Documents; or

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

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 in accordance with Paragraph 14.04 or 14.05).

B. *Intent of Certain Terms or Adjectives:*

E. *Furnish, Install, Perform, Provide:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

- 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. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

C. *Day:*

F. 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.

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

ARTICLE 2 – PRELIMINARY MATTERS

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

2.01 *Delivery of Bonds and Evidence of Insurance*

- a. does not conform to the Contract Documents; or
- b. does not meet the requirements of any applicable inspection, reference standard,

A. 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 Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional

insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
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 Documents;
 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.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- 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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *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 2.05.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 component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, 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. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, 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, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement 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, 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 Contract Documents. 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 Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, 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) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

- a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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).

extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

- 1. A Field Order;
- 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
- 3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

- 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
- 2. reuse any such Drawings, Specifications, other documents, or copies thereof on

**ARTICLE 4 – AVAILABILITY OF LANDS;
SUBSURFACE AND PHYSICAL CONDITIONS;
HAZARDOUS ENVIRONMENTAL CONDITIONS;
REFERENCE POINTS**

4.01 *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. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- 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 the Work is to be performed 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.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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.

4.03 *Differing Subsurface or Physical Conditions*

- A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed 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 4.02 is materially inaccurate; or
 - 2. is of such a nature as to require a change in the Contract Documents; 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 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

- B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous 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 Supplementary Conditions:

1. Owner and Engineer shall not be responsible for 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 such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, 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 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the

extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys 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.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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.

- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) 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 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. 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, either party may make a Claim therefor as provided in Paragraph 10.05.
- 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. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors 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 a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by

Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds 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 each bond.

- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a

certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property

(including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible

amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's

exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES6.01 *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. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *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. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *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.

- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, 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.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and “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 specification or description 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 or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be

submitted to Engineer for review under the circumstances described below.

1. *“Or-Equal” Items:* If in Engineer’s sole discretion 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, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, 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; and
 - 3) it has a proven record of performance and availability of responsive service.
- 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.

2. *Substitute Items:*

- a. If in Engineer’s sole discretion an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.

d. 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:

- 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
- 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor’s achievement of Substantial Completion on time,
 - b) 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

- c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
- 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:*

If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

- C. *Engineer's Evaluation:*** Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

- D. *Special Guarantee:*** Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

- E. *Engineer's Cost Reimbursement:*** Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- F. *Contractor's Expense:*** Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A.** Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

- B.** If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. 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 any right of Owner or Engineer to reject defective Work.

C. 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. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. 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.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and

all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *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, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors 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.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *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 knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear 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 Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the

Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors 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 claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other 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 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 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 property to stresses or pressures that will endanger it.
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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
 - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
 - 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 6.13.A.2 or 6.13.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 (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

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

entity directly or indirectly employed by any of them).

- F. Contractor's duties and responsibilities for safety and for protection of the Work 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 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *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.

6.15 *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.

6.16 *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.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- 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 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. 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 6.17.D.

- B. 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. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each 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 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 and approval of that 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 both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

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 will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate

approval of the assembly in which the item functions.

3. Engineer's review and approval 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 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

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.

6.18 *Continuing the Work*

- A. 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, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. 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.
- C. 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 or the issuance of a notice of acceptability by Engineer;
 - 6. any inspection, test, or approval by others; or
 - 7. any correction of defective Work by Owner.

Work or anyone for whose acts any of them may be liable .

- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) 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, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers’ compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer’s officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors 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 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

6.21 *Delegation of Professional Design Services*

- A. 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 law.
- B. 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, Shop Drawings 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.

- C. Owner and Engineer 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.
- D. Pursuant to this Paragraph 6.21, 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 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, 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.

7.02 Coordination

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.09 *Limitations on Owner's Responsibilities*

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

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.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.03 *Furnish Data*

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

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to

8.12 *Compliance with Safety Program*

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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER’S STATUS DURING CONSTRUCTION

9.01 *Owner’s Representative*

- A. Engineer will be Owner’s representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner’s representative during construction are set forth in the Contract Documents.

9.02 *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 will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. 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 9.09. 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.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of

any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer’s consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which 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. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer’s authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with 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, see Paragraph 6.21.

- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. 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 Paragraph 10.05.

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

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show

partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- 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, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. 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 14.07.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.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer’s employees and representatives shall comply with the specific applicable requirements of Contractor’s safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner’s correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

- 2. 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; and
- 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *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.

10.05 *Claims*

- A. *Engineer’s Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional

or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and

paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs 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 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. 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, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
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. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment 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 required by Owner, Contractor shall obtain competitive bids from

subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. 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 11.01.

4. 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.
5. 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 whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, 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. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *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 officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for

general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which 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. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work 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 or when a Claim for an 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 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, 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.

11.02 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:*

1. Contractor agrees that:
 - a. 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
 - b. 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:*

1. 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.

11.03 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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

- 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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 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; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor 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.
- 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* 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 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.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 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - 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

**ARTICLE 12 – CHANGE OF CONTRACT PRICE;
CHANGE OF CONTRACT TIMES**

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for 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, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

- 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 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, 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 Price or the Contract Times, or both. 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.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the

control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is 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 described in this Paragraph 12.03.C.

- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

**ARTICLE 13 – TESTS AND INSPECTIONS;
CORRECTION, REMOVAL OR ACCEPTANCE OF
DEFECTIVE WORK**

13.01 *Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests 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.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- 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.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and

Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at 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, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, 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 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 Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. 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, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *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, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop

the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. 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 removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial 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 found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 1. repair such defective land or areas; or
 2. correct such defective Work; or
 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 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. 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) will be paid by Contractor.
- 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 13.07, 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 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. 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) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to

Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *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 in accordance with Paragraph 13.06.A, 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, 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 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, 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 (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) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work;

and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A 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.

14.02 *Progress Payments*

A. 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 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.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, 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 (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); 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 Documents; 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. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the

representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

- 2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action 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, when Contractor remedies the reasons for such action.
- 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

C. *Payment Becomes Due:*

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

D. *Reduction in Payment:*

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events

- 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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to

make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- 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. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and

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 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 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 Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *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 is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) 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.

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 Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. 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. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and

accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 - 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 - 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will 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 established

under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

- 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 - 3. Contractor's repeated disregard of the authority of Engineer; or
 - 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 - 1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 - 2. 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
 - 3. complete the Work as Owner may deem expedient.
 - C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, 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 (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
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, plus fair and reasonable sums for overhead and profit on such expenses;
3. 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) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) 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 15.03.

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, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

SECTION 00800
SUPPLEMENTARY CONDITIONS

**INDIAN RIVER COUNTY SOLID WASTE DISPOSAL DISTRICT
BOARD OF COMMISSIONERS
1801 27th Street, Vero Beach, Florida 32960**



**SUPPLEMENTARY CONDITIONS
TO THE
GENERAL CONDITIONS**

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SECTION 00800
SUPPLEMENTARY CONDITIONS

ARTICLE 1 - AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC Document No. C-700, 2007 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01B.

Delete paragraph SC-2.01B of the General Conditions in its entirety and replace with the following:

B. Before any Work at the site is started, Contractor shall deliver to Owner, with copies to Engineer and each additional insured identified in Article 5 of the Supplementary Conditions, certificates of insurance (and other evidence of insurance which Owner or any additional insured may reasonably request) which Contractor is required to purchase and maintain in accordance with the requirements of Article 5.

SC-2.02A.

Delete "ten" in the first line and replace with "two."

SC-2.03A.

Delete paragraph SC-2.03A. of the General Conditions in its entirety and replace with the following:

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 60 days after the Effective Date of the Agreement.

SC-2.05A.1. Add the following immediately at the end of subparagraph SC-2.05A.1: using the Critical Path Method (CPM).

SC-2.05A.4. Add new subparagraph 4 after the existing text of SC-2.05 of the General Conditions:

4. If this Project is an addition to an existing working facility, then the CONTRACTOR shall coordinate with the OWNER on tie-ins. The OWNER shall have final say on facility shut down times and duration to make tie-ins.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01C.

Add a new paragraph D. immediately after Paragraph SC-3.01C of the General Conditions which is to read as follows:

D. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly

inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

SC-3.03A.3. Delete existing SC-3.03A.3 of the General Conditions in its entirety and replace it with the following:

CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or, in the exercise of ordinary care, reasonably should have recognized such conflict, error, ambiguity, or discrepancy and failed to report it in writing to the OWNER and the ENGINEER.

SC-3.03B. Delete existing SC-3.03B of the General Conditions in its entirety and replace it with the following

B. Resolving Discrepancies: Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall be read together as a whole not in isolation so as to give meaning to each provision; however, to the extent there is a conflict or inconsistency between or among provisions, the strictest or most stringent standard shall apply.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

SC-4.01A.

Add the following new paragraph immediately after paragraph SC-4.01A. of the General Conditions which is to read as follows:

1. If all lands and rights-of-way are not obtained as herein contemplated before construction begins, Contractor shall begin the Work upon such land and rights-of-way as Owner has previously acquired.

SC-4.02B. Delete paragraph SC-4.02B in its entirety and replace with the following:

The information and data shown or indicated in the Contract Documents with respect to Underground Facilities owned by others or contiguous to the site is based on information and data furnished to OWNER or the ENGINEER by the owners of such Underground Facilities or by others. The OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data, and the CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, and the CONTRACTOR shall have full responsibility for physical conditions, and Underground Facilities owned by OWNER or others, shown or indicated in the Contract Documents.

SC-4.02C, D, and E Add new paragraphs C, D, and E immediately after Paragraph SC-4.02B of the General Conditions to read as follows:

C. Field Measurements: Before undertaking each part of the construction, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to the OWNER any conflict, error or discrepancy which CONTRACTOR or any of his Subcontractors or Suppliers may discover and shall obtain a written interpretation or clarification from OWNER before proceeding with any Work affected thereby; provided, however, CONTRACTOR shall not be liable to the OWNER for failure to report any conflict, error or discrepancy unless CONTRACTOR or any of his Subcontractors or Suppliers had actual

knowledge thereof or should reasonably have known thereof.

D. Scheduling: Unless it prejudices Work already excavated and uncovered, CONTRACTOR shall schedule layout, excavating and uncovering of Work or Underground Facilities a sufficient time in advance to allow the ENGINEER'S review, and the possible amending or supplementing of the Contract Documents.

E. UTILITY COORDINATION.

1. CONTRACTOR'S Responsibility: The CONTRACTOR shall be responsible for making all necessary arrangements with governmental departments, public utilities, public carriers, service companies and corporations owning or controlling roadways, railways, water, sewer, gas, electrical, cable television, telephone, and telegraph facilities such as pavements, tracks, piping, wires, cables, conduits, poles, guys, etc., including incidental structures connected therewith, that are encountered in the Work in order that such items may be properly shored, supported and protected, or the CONTRACTOR shall be solely responsible for coordinating their relocation. The CONTRACTOR shall give proper notices, shall comply with requirements of such parties in the performance of its Work, shall permit entrance of such parties on the Work, and shall pay all charges and fees made by such parties for its Work. The CONTRACTOR'S attention is called to the fact that there may be delays on the Project due to Work to be done by governmental departments, public utilities, and others in repairing poles, conduits, etc. The CONTRACTOR shall cooperate with the above parties, in every way possible, so that the construction can be completed in the least possible time.

2. Connection: At all points where the Work constructed by the CONTRACTOR connects to existing utilities and services, the actual Work of making the necessary connection to the existing service or utility shall be arranged for by CONTRACTOR at no additional expense to OWNER (unless specifically indicated otherwise). Services and utilities included within (but not limited to) this responsibility are roads, ditches, electrical, sewer, mechanical, utilities, water, fencing, etc. Connections shall be made at a time that will result in the least possible interference with existing services.

SC-4.03A. Delete SC-4.03 A of the General Conditions in its entirety and replace it with the following:

A. Notice: The CONTRACTOR shall promptly, and before such conditions are disturbed, and in no event later than 10 days after first observance of the conditions, notify the OWNER and ENGINEER in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this Contract, or (2) unknown physical conditions at the site of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in this Contract. The OWNER will promptly investigate the conditions, and if it finds that such conditions do materially so differ and cause an increase or decrease in the CONTRACTOR'S cost of, or the time required for, performance of any part of the Work under this Contract, a Change Order shall be issued accordingly based on the Schedule of Values and executed by the OWNER and the CONTRACTOR. CONTRACTOR'S failure to provide notice upon discovery of the differing site condition shall waive any entitlement to such an adjustment in the Contract Price or Contract Time. Further, no Claim of the CONTRACTOR under this paragraph SC-4.03A shall be allowed unless the CONTRACTOR has given the notice as required in this paragraph 4.03A.

SC-4.03B. Delete paragraph SC-4.03B of the General Conditions in its entirety.

SC-4.03C.1. Delete subparagraph SC-4.03C.1 of the General Conditions in its entirety.

SC-4.03C.1. Delete subparagraphs SC-4.03C.1 a. and b. of the General Conditions in its entirety.

SC-4.03C.3. Delete paragraph SC-4.03C.3. of the General Conditions in its entirety.

SC-4.05A. Add the following new paragraph immediately after paragraph SC-4.05A. of the General Conditions to read as follows:

B. The CONTRACTOR shall furnish all stakes, templates, and other materials necessary for establishing and maintaining the lines and grades necessary for control and construction of the Work. ENGINEER may check the lines, elevations, reference marks, batter boards, etc., set by CONTRACTOR, and CONTRACTOR shall correct any errors disclosed by such check. Such a check shall not be considered as approval of CONTRACTOR'S work and shall not relieve CONTRACTOR of the responsibility for accurate construction of the entire Work. CONTRACTOR shall furnish personnel to assist ENGINEER in checking lines and grades.

SC-4.06D. Delete the last sentence of paragraph SC-4.06D of the General Conditions in its entirety

SC-4.06G. Delete paragraph SC-4.06G of the General Conditions in its entirety.

SC-4.07 Add new paragraph SC-4.07 of the General Conditions to read as follows:

SC-4.07 *Archaeological or Historical Resources at Site*: If Archaeological or Historical Resources are revealed, uncovered, or discovered at the site, CONTRACTOR shall cease work immediately and promptly, and before such conditions are disturbed, and in no event later than 5 days after first observance of the conditions, notify the OWNER and ENGINEER in writing of such conditions. OWNER shall obtain the services of an Archaeologist registered with the State of Florida Register of Professional Archaeologists. Based on Archaeologist's determination, if OWNER finds that such conditions cause an increase or decrease in the CONTRACTOR'S cost of, or the time required for, performance of any part of the Work under this Contract, a Change Order shall be entered accordingly. CONTRACTOR'S failure to provide notice upon discovery of the Archaeological or Historical Resources shall waive any entitlement to such an adjustment in the Contract Price or Contract Time.

ARTICLE 5 - BONDS AND INSURANCE

SC-5.01A. Delete existing paragraph SC-5.01A of the General Conditions in its entirety and replace with the following:

SC-5.01A. CONTRACTOR shall furnish Public Construction Bond, in an amount equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR'S obligations under the Contract Documents. The Bond shall remain in effect at least until one year after the date when final payment is made, except as provided otherwise by Laws or Regulations or by the Contract Documents. Pursuant to Florida Statutes section 255.05(1)(a) (2007), any claimant (as such term is defined in Florida Statutes section 713.01) may apply to Indian River County as OWNER for copies of the Agreement and the recorded payment and performance bonds and shall thereupon be furnished with certified copies of such documents.

SC 5.02A. Delete the words "OWNER or" in line three.

SC 5.03B. Delete existing paragraph SC-5.03B of the General Conditions in its entirety

SC 5.04B. Delete existing paragraph SC-5.04B of the General Conditions in its entirety and replace with the following:

B. The CONTRACTOR shall not commence Work under the Agreement until it has obtained all insurance required under the Agreement and the Indian River County Risk Manager has approved such insurance. The CONTRACTOR shall procure and maintain, for the duration of the Agreement, the minimum insurance coverage as set forth herein. The cost of such insurance shall be included in the Contract Price

C. The insurance required by paragraph SC-5.04A of the General Conditions shall provide coverage for not less than the following amounts:

1. Workers' Compensation: To meet statutory limits in compliance with the Workers' Compensation Law of Florida. This policy must include employers' liability with a limit \$500,000 for each accident, \$500,000 disease policy limit and \$100,000 disease each employee. Such policy shall include a waiver of subrogation as against OWNER on account of injury sustained by an employee(s) of the CONTRACTOR.

2. Commercial General Liability: A per occurrence form policy, including Premise Operations, Independent CONTRACTORS, Products and Completed Operations including X, C, U (Explosion, Collapse, Underground) Broad Form Property Damage, Broad Form Property Damage Endorsement, with a combined single limit of not less than \$3,000,000 general aggregate to include products/completed operations, personal injury/advertising liability, fire damage /legal liability, and medical payments. Limits can be layered with an Excess Liability Policy (Umbrella).

3. Business Auto Liability: Coverage shall include Owned vehicles and Hired/Non-Owned vehicles, for a combined single limit (bodily injury and property damage) of not less than \$3,000,000/combined single limit (Bodily Injury/Property Damage); personal injury protection -- statutory limits; \$1,000,000 uninsured/underinsured motorist; \$1,000,000/hired/non-owned auto liability. Limits can be layered with Excess Liability Policy (Umbrella).

4. Contractor's Builders' Risk "All Risk" Insurance: – Contractor's Builders' Risk "All Risk" Insurance: – All risk coverage with limits equal to one hundred percent (100%) of the completed value of the Work. There shall be a waiver of occupancy endorsement to enable the OWNER to occupy the facility under construction during such activity. The policy must be endorsed to provide machinery/equipment endorsement during transit and installation, and OWNER direct purchase materials. The maximum deductible under this coverage is \$10,000 per claim, except Wind Storm coverage which will have a maximum deductible equal to 2 percent of the completed value of the work. In accordance with Article 10 of the Agreement, Indian River County as OWNER shall pay the full amount of any and all deductibles incurred for any loss of OWNER direct purchased materials where such loss result from either (1) the negligence of Indian River County as OWNER or (2) a force majeure event beyond the control of OWNER or CONTRACTOR. Notwithstanding the foregoing, CONTRACTOR is responsible for risk of loss to OWNER direct purchased materials attributable to the negligence of CONTRACTOR or its agents.

5. All risk coverage with limits equal to one hundred percent (100%) of the completed value of the Work. There shall be a waiver of occupancy endorsement to enable the OWNER to occupy the facility under construction during such activity. The policy must be endorsed to provide machinery/equipment endorsement during transit and installation, and OWNER direct purchase materials, if any. The maximum deductible under this coverage is \$10,000 per claim.

6. Flood Insurance: - CONTRACTOR shall maintain coverage when the buildings or structures are located within an identified special flood hazard area. Such flood insurance shall protect the interests of the CONTRACTOR and the County and shall be afforded for the lesser of the total insurable value of such buildings or structures, or, the maximum amount of flood insurance coverage available under the National Flood Insurance Program.

D. Insurance Requirements: – Ten (10) days prior to the commencement of any Work under the Contract, a certificate of insurance shall be provided to the Indian River County Risk Manager for review and approval. The certificate shall provide that: (a) Indian River County (as OWNER) be named as an additional insured on the commercial general liability, auto liability, and CONTRACTOR’S Builders’ Risk “All Risk” insurance policies; (b) the CONTRACTOR’S insurance coverage shall be primary; and (c) Indian River County (as OWNER) will be given thirty (30) days’ notice prior to cancellation or modification of any required insurance and such notice shall be in writing by registered mail, return receipt requested and addressed to the Indian River County Risk Manager. It shall be the responsibility of the CONTRACTOR to ensure that all subcontractors comply with all insurance requirements of this Contract

E. All coverage shall be maintained without interruption from date of commencement of Work and remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07. In addition, with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, such insurance shall remain in effect for at least two years after final payment. CONTRACTOR shall furnish OWNER with evidence satisfactory to OWNER of the continuation of such insurance at final payment and again one year thereafter, so that OWNER is assured of such continuing coverage.

F. All insurers must be authorized to do business in Florida and have a Best Key Rating of A- VII.

G. The insurance companies selected shall send written verification to the Indian River County Risk Manager that they will provide 30 days prior written notice to the Indian River County Risk Manager of its intent to cancel or modify any required policies of insurance.

SC 5.05 Delete existing paragraph SC-5.05 of the General Conditions in its entirety.

SC-5.06 Delete existing paragraph SC-5.06 of the General Conditions in its entirety.

SC-5.07 Delete existing paragraph SC-5.07 of the General Conditions in its entirety and replace with the following:

A. All insurance policies provided by the CONTRACTOR shall contain provisions to the effect that the insurer waives all rights of subrogation against any of the insured, additional insured, (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) OWNER and the ENGINEER.

SC-5.08 Delete existing paragraph SC-5.08 of the General Conditions in its entirety.

SC-5.09 Delete existing paragraph SC-5.09 of the General Conditions in its entirety.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

SC 6.01B. Delete paragraph SC-6.01B of the General Conditions in its entirety, and replace with the following:

SC6.01B The CONTRACTOR shall employ a competent superintendent and necessary assistants who shall be assigned to, and in attendance at, the Project site during performance of the Work. The superintendent shall be reasonably satisfactory to the OWNER. So long as the superintendent remains employed by the CONTRACTOR or any related entity, the superintendent shall not be replaced without the OWNER’S prior written consent, except under extraordinary circumstances. The superintendent shall represent the

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CONTRACTOR, and communications given to the superintendent shall be as binding as if given to the CONTRACTOR.

SC-6.02 C and D. Add the following new paragraphs immediately after paragraph SC-6.02B. of the General Conditions which are to read as follows:

C. Regular working hours are defined as 8 hours per day, Monday through Friday, excluding holidays, between the hours of 7:00 AM and 6:00 PM. Requests to work other than regular working hours shall be submitted to ENGINEER not less than 48 hours prior to any proposed weekend work or scheduled extended work weeks. Occasional unscheduled overtime on weekdays may be permitted provided two hours notice is given to ENGINEER.

D. CONTRACTOR shall reimburse the OWNER for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated in Article SC-6.02C. At OWNER'S option, overtime costs may either be deducted from the CONTRACTOR'S monthly payment request or deducted from the retainage prior to release of final payment. Overtime costs for the OWNER'S personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the ENGINEER or OWNER'S independent testing laboratory shall be calculated in accordance with the terms of their respective contracts with the OWNER.

SC 6.04A.1. Add the following sentence immediately after the existing text in paragraph 6.04 A.1 of the General Conditions:

Additionally, any and all changes to the Project's critical path must be reflected in each Project schedule.

SC-6.04A.3. Add the following paragraph immediately after paragraph SC-6.04A.2 of the General Conditions:

CONTRACTOR shall give OWNER full information in advance as to its plans for performing each part of the Work. If at any time during the progress of Work, CONTRACTOR'S actual progress is inadequate to meet the requirements of the Contract, OWNER may, but is not obligated to, so notify CONTRACTOR. In such event, CONTRACTOR acknowledges and agrees that CONTRACTOR shall implement some or all of the following remedial actions at the sole cost and expense of CONTRACTOR: (a) Increase manpower in such quantities and crafts as necessary to eliminate the backlog of Work; (b) Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of Work; or (c) Reschedule the Work in conformance with the specification requirements. Neither such notice by OWNER nor OWNER'S failure to issue such notice shall relieve CONTRACTOR of its obligation to achieve the quality of Work and rate of progress required by the Contract. Failure of CONTRACTOR to implement some or all of the remedial actions may be grounds for determination by OWNER that CONTRACTOR is not prosecuting its Work with such diligence as will assure completion within times specified. Upon such determination, OWNER may terminate CONTRACTOR'S right to proceed with the performance of the Contract, or any separable part thereof, in accordance with the applicable provisions of this Contract.

SC-6.06A. Delete Paragraph SC-6.06A of the General Conditions in its entirety and replace with the following:

A. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization, (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom OWNER may have reasonable objection. Acceptance of any Subcontractor, Supplier or other person or organization by OWNER shall not constitute a waiver of any right of OWNER to reject defective

Work. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization against whom CONTRACTOR has reasonable objection.

SC-6.06B. Delete Paragraph SC-6.06B of the General Conditions in its entirety.

SC-6.08 Delete Paragraph SC-6.08 of the General Conditions in its entirety and replace with the following:

ALL PERMIT, IMPACT, OR INSPECTION FEES APPLICABLE AT THE TIME OF OPENING OF BIDS THAT ARE PAYABLE TO INDIAN RIVER COUNTY IN CONNECTION WITH THE WORK ON THIS COUNTY PROJECT WILL BE PAID BY INDIAN RIVER COUNTY AND SHALL BE EXCLUDED FROM THE BID.

SC-6.11A.3. Delete the words: “arbitration or” in line 9 of paragraph SC-6.11 A.3 of the General Conditions.

SC 6.19A. Delete Paragraph SC-6.19A. of the General Conditions in its entirety and replace with the following:

A. CONTRACTOR warrants and guarantees to OWNER for one (1) year from the date of Final Completion that all Work will be in accordance with the Contract Documents and will not be defective; provided, however, that manufacturer equipment warranties may be of a longer duration.

SC-6.21E. Delete paragraph SC-6.21E of the General Conditions in its entirety and replace with the following:

E. CONTRACTOR shall not be responsible for the adequacy of the performance criteria or design criteria required by or contained in the Contract Documents.

ARTICLE 7 OTHER WORK AT THE SITE

SC-7.01A. Delete paragraph SC-7.01A of the General Conditions in its entirety and replace with the following:

SC-7.01A. Related Work at Site. OWNER may perform other work related to the Project at the Site with OWNER’S employees, or pursuant to direct contracts with others. If such other work is not noted in the Contract Documents, then written notice thereof will be given by OWNER to CONTRACTOR prior to OWNER starting any such other work; and CONTRACTOR shall perform in accordance with Article 7 of the General Conditions.

ARTICLE 8 OWNER'S RESPONSIBILITIES

SC-8.02 Delete paragraph SC-8.02 of the General Conditions in its entirety and replace with the following:

If OWNER terminates the employment of ENGINEER, OWNER may appoint another engineer whose status under the Contract Documents shall be that of the former ENGINEER.

SC-8.04 Delete paragraph SC-8.04 of the General Conditions in its entirety and replace with the following:

Payments under this contract are governed by the Local Government Prompt Payment Act, Florida Statutes section 218.70 et. seq.

SC-8.06 Delete paragraph SC-8.06 of the General Conditions in its entirety.

SC-8.11 Delete paragraph SC-8.11 of the General Conditions in its entirety.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.02 Delete the first sentence of paragraph SC-9.02A of the General Conditions in its entirety and replace with the following:

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 ENGINEER the progress that has been made and the quality of the various aspects of CONTRACTOR'S executed Work.

SC-9.03B. Add the following new paragraph B. immediately after paragraph SC-9.03A of the General Conditions which is to read as follows:

B. ENGINEER will furnish a part-time Resident Project Representative. CONTRACTOR is responsible to give 24-hour notice on all required inspections so that the Resident Project Representative may be present.

SC-9.04A. Delete the third sentence of paragraph SC-9.04A of the General Conditions in its entirety and replace with the following:

However, if CONTRACTOR claims entitlement to additional time or money as a result of the Field Order, such entitlement is conditioned upon obtaining a Change Order authorized and executed by OWNER after timely making a Claim as provided in the Contract Documents.

SC-9.08A. Delete the second sentence of SC-9.08A of the General Conditions in its entirety and replace with the following:

Except for: (a) Claims for differing subsurface or physical conditions governed by paragraph SC-4.03; and (b) claims for time extensions governed by paragraph SC-12.03, all matters in question and other matters between OWNER and CONTRACTOR arising prior to the date final payment is due, relating to the acceptability of the Work and the interpretation of the requirements of the contract documents pertaining to the performance of the Work, will be referred initially to ENGINEER in writing within 15 days after occurrence of the event giving rise to such Claim or within 15 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later; provided, however, the OWNER shall make all final determination of such matters.

SC-9.08C. Delete paragraph SC-9.08C of the General Conditions in its entirety.

SC-9.08D. Delete paragraph SC-9.08D of the General Conditions in its entirety.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

SC-10.03A.1. Add the word "and" at the end of the paragraph.

SC-10.03A.3. Delete subparagraph SC-10.03A.3 of the General Conditions in its entirety.

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SC-10.05A. Delete paragraph 10.05.A of the General Conditions in its entirety and replace with the following:

A. All Claims shall initially be referred to the ENGINEER for decision.

SC-10.05B. Delete paragraph SC-10.05.B of the General Conditions in its entirety and replace with the following:

Except for: (a) Claims for differing subsurface or physical conditions governed by paragraph SC-4.03; and (b) claims for time extensions governed by paragraph SC-12.03, Claims by either party shall be initiated within 15 days after occurrence of the event giving rise to such Claim or within 15 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later, by written notice of the amount or extent of the Claim, dispute, or other matter with supporting data to the ENGINEER and the other party by written notice stating the general nature of each Claim, dispute, or other matter delivered by the claimant to ENGINEER and the other party to the Contract. A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph SC-12.01B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph SC-12.02B. No claim by the CONTRACTOR for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Contract.

ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-11.02A. Delete paragraph SC-11.02A of the General Conditions in its entirety and replace with the following:

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 as may be acceptable to OWNER.

Delete paragraphs SC-11.02B through D of the General Conditions in their entirety.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.01A. Delete paragraph SC-12.01A of the General Conditions in its entirety and replace with the following:

The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on written notice in accordance with the provisions of paragraph SC-10.05.

SC-12.01B.2. Delete paragraph SC-12.01B.2 of the General Conditions in its entirety and replace with the following:

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum.

SC-12.01B.2. Delete the word "or" at the end of the paragraph.

SC-12.01B.3. Delete paragraph SC-12.01B.3 of the General Conditions in its entirety.

SC-12.01C. Delete paragraph SC-12.01C of the General Conditions in its entirety.

SC-12.03A and B Delete paragraphs SC-12.03A and SC-12.03B of the General Conditions in their entirety and replace with the following:

A. Where CONTRACTOR is delayed or prevented from completing any part of the Work within the Contract Times due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if (1) a Claim is made therefore as provided in paragraph SC-12.02A and (2) CONTRACTOR provides evidence that the delay impacted the critical path of the Project. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, abnormal weather conditions or acts of God. The CONTRACTOR must request the extension of time in writing and must provide the following information within the time periods stated hereafter. Failure to submit such information and in compliance with the time requirements hereinafter stated, shall constitute a waiver by the CONTRACTOR and a denial of the claim for extension of time:

1. Nature of the delay or change in the Work;
2. Dates of commencement and cessation of the delay or change in the Work;
3. Activities on the current progress schedule affected by the delay or change in the Work;
4. Identification and demonstration that the delay or change in Work affects the critical path;
5. Identification of the source of delay or change in the Work;
6. Anticipated extent of the delay or change in the Work; and
7. Recommended action to minimize the delay.

B. CONTRACTOR hereby affirms that the extension of time granted herein is the CONTRACTOR'S sole and exclusive remedy. Apart from extension of time, no payment or claim for damages shall be made to the CONTRACTOR as compensation for damages for any delays or hindrances from any cause whatsoever in the progress of the Work whether such delay is avoidable or unavoidable.

SC-12.03C. Delete paragraph SC-12.03C of the General Conditions in its entirety.

SC-12.03D. Delete paragraph SC-12.03D of the General Conditions in its entirety and replace with the following:

In no event shall OWNER, ENGINEER, or the Related Entities of either of them be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or any surety for or employee or agent of any of them, for any claim, cost, loss, or damages of any nature whatsoever arising out of or resulting from delays.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-13.04C. Delete paragraph SC-13.04.C of the General Conditions in its entirety and replace with the following:

If it is found that the uncovered Work is defective, 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 other dispute resolution costs) 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 OWNER shall be entitled to an appropriate decrease in the Contract Price.

SC-13.04D. Delete paragraph SC-13.04D of the General Conditions in its entirety and replace with the following:

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.

SC-13.06A. Delete the words: “arbitration or” in line 10 of paragraph SC-13.06A of the General Conditions.

SC-13.07A. Add the following sentence at the beginning of paragraph SC-13.07A of the General Conditions:

The OWNER and CONTRACTOR agree that a warranty inspection shall be scheduled no later than eleven (11) months after final payment under this Contract so that the OWNER and the CONTRACTOR may inspect and otherwise examine the Work prior to the expiration of the Performance Bond

SC-13.07E. Delete paragraph SC-13.07E of the General Conditions in its entirety and replace with the following:

CONTRACTOR’S obligations under this paragraph SC-13.07 are in addition to any other obligation or warranty. The provisions of this paragraph SC-13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or any way to limit the CONTRACTOR’S continued liability for defective Work, including latent defects.

SC 13.08A. TWO changes:

1. Delete the words: “arbitration or” in line 8 of paragraph SC-13.08A of the General Conditions.
2. Delete the phrase “(such costs to be approved by ENGINEER as to reasonableness)” in lines 10 and 11 of paragraph SC-13.08A of the General Conditions.

SC-13.09C. Delete the words: “arbitration or” in line 4 of paragraph SC-13.09C of the General Conditions.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02A.1. Delete the first sentence of paragraph SC-14.02A.1 of the General Conditions in its entirety and replace with the following:

On or before the tenth (10th) day of each month, and not more often than once a month, the CONTRACTOR shall submit completed partial progress payment requests to the ENGINEER, as set forth herein. 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 for Payment and accompanied by such supporting documentation as is required by the Contract Documents. Such supporting documents shall include but not be limited to, the required CONTRACTOR’S certification; retainage as set

forth in the Agreement; and a monthly dated CPM schedule for the Project. The CONTRACTOR shall make the following certification (Affidavit) on each Application for Payment: "I hereby certify that the labor and materials listed on this Application for Payment have been used in the construction of this Work and payment received from the last request for payment has been used to make payments to all subcontractors, laborers, material, men and suppliers except as listed below: _____." All payments by Indian River County as OWNER shall be made in accordance with the Local Government Prompt Payment Act. Florida Statutes section 218.70 et. seq.

SC-14.02A.3. Add a new paragraph immediately after paragraph SC-14.02A.3 of the General Conditions, which is to read as follows:

4. CONTRACTOR shall furnish satisfactory proof to OWNER and ENGINEER that payment received from OWNER for materials and equipment not incorporated into the Work and suitably stored, has in fact been paid to the respective supplier(s) within ten (10) days of CONTRACTOR'S receipt of payment from OWNER. Failure to provide such evidence of payment shall result in the withdrawal of previous approval(s) and removal of the cost of related materials and equipment from the next submitted Application for Payment, and shall be deemed a default under the Contract.

SC-14.02C.1. Delete paragraph SC-14.02C of the General Conditions in its entirety and replace with the following:

All payments by Indian River County as OWNER shall be made in accordance with the Local Government Prompt Payment Act. Florida Statutes section 218.70 et. seq.

SC-14.02D.1.d Delete paragraph SC-14.02D.1.d of the General Conditions in its entirety and replace with the following:

OWNER has actual knowledge of the occurrence or probable occurrence of any of the events enumerated in paragraphs SC-14.02B.5.a through SC-14.02B.5.d or paragraph SC-15.02A.

SC-14.02D.2. Delete paragraph SC-14.02D.2 of the General Conditions in its entirety and replace with the following:

If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER shall provide notice to CONTRACTOR in accordance with the provisions of the Local Government Prompt Payment Act. Florida Statutes section 218.70 et. seq. and pay CONTRACTOR any amount remaining after deduction of the amount so withheld in accordance with the provisions of the Local Government Prompt Payment Act. Florida Statutes section 218.70 et. seq. OWNER shall pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, in accordance with the provisions of the Local Government Prompt Payment Act. Florida Statutes section 218.70 et. seq.

SC-14.02D.3. Delete paragraph SC-14.02D.3 of the General Conditions in its entirety

SC-14.03A. Add the following sentences to the end of the existing paragraph SC-14.03A of the General Conditions as follows:

No materials or supplies for the Work shall be purchased by CONTRACTOR or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. CONTRACTOR warrants that CONTRACTOR has good title to all materials and supplies used by CONTRACTOR in the Work, free from all liens, claims or encumbrances.

SC-14.04C. Delete paragraph SC-14.04C of the General Conditions in its entirety and replace with the following:

If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion that shall fix the date of Substantial Completion. In accordance with the provisions of Florida Statutes section 208.735(7)(a)(2008), upon receipt of the tentative certificate of Substantial Completion from ENGINEER, the OWNER, the ENGINEER, and the CONTRACTOR shall conduct a walk-through inspection of the Project to document a list of any items required to render the Work on the Project complete, satisfactory, and acceptable under this Agreement (herein the "Statutory List"). The Statutory List shall be reduced to writing and circulated among the OWNER, the ENGINEER, and the CONTRACTOR by the OWNER or the ENGINEER within 30 calendar days after substantial completion. The OWNER and CONTRACTOR acknowledge and agree that: 1) the failure to include any corrective work, or pending items that are not yet completed, on the Statutory List does not alter the responsibility of the CONTRACTOR to complete all of the Work under this Agreement; 2) upon completion of all items on the Statutory List, the CONTRACTOR may submit a pay request for all remaining retainage except as otherwise set forth in this Agreement; and 3) any and all items that require correction under this Agreement and that are identified after the preparation of the Statutory List remain the obligation of the CONTRACTOR to complete to the OWNER'S satisfaction under this Agreement. After receipt of the Statutory List by the CONTRACTOR, the CONTRACTOR acknowledges and agrees that it will diligently proceed to complete all items on the Statutory List and schedule a final walk-through in anticipation of final completion on the Project.

SC 14.04D. Delete paragraph SC-14.04D of the General Conditions in its entirety and replace with the following:

At the time of delivery of the tentative certificate of Substantial Completion, ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees.

SC 14.07A.3. Delete paragraph SC-14.07A.3 of the General Conditions in its entirety.

SC-14.07B.1. Delete paragraph SC-14.07B.1 of the General Conditions in its entirety and replace with the following:

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, all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, ENGINEER will indicate, within twenty days after receipt of the final Application for Payment, in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable. 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.

SC-14.07C.1. Delete paragraph SC-14.07C.1 in its entirety and replace with the following: Payment shall be made by OWNER to CONTRACTOR according to the Local Government Prompt Payment Act, Florida Statutes section 218.70 et.seq.

SC-14.08 Delete paragraph SC-14.08 of the General Conditions in its entirety.

SC-14.09 Delete paragraph SC-14.09 of the General Conditions in its entirety.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

SC-15.02A.1. Delete subparagraph SC-15.02A.1 of the General Conditions in its entirety, and replace with the following:

1. CONTRACTOR'S persistent failure to perform the Work in accordance with the Contract Documents;

SC-15.02A.4. Delete subparagraph SC-15.02A.4 of the General Conditions in its entirety, and replace with the following:

4. CONTRACTOR'S violation of any material provisions of the Contract Documents.

SC-15.02A.5 and 6 Add the following new subparagraphs at the end of paragraph SC-15.02A:

5. Failure of CONTRACTOR to make proper payments to Subcontractors for labor, materials, or equipment in connection with the Work.

6. If CONTRACTOR abandons the Work, or assigns Contract or any part thereof, without the previous written consent of OWNER, otherwise than in accordance with the Contract Documents.

SC-15.02C. Delete the words: "arbitration or" in line 8 of paragraph SC-15.02C of the General Conditions.

SC-15.02G. Add the following new paragraph immediately following paragraph SC-15.02F of the General Conditions:

G. If, after termination of the Contract by the OWNER for cause as set forth in paragraph SC-15.02, it is determined that the CONTRACTOR had not failed to fulfill its contractual obligations, the termination under paragraph SC-15.02 shall be deemed to have been for the convenience of the OWNER. In such event, adjustment of the contract price shall be made as provided in paragraph SC-15.03.

SC-15.03A.3. Delete subparagraph SC-15.03A.3. of the General Conditions in its entirety.

ARTICLE 16 - DISPUTE RESOLUTION

SC-16.01A. Delete the paragraph SC-16.01A of the General Conditions in its entirety and replace with the following:

A. Prior to the filing of any suit or other legal proceedings, the parties shall endeavor to resolve claim disputes or other matters in question by mediation. Mediation shall be initiated by any party by serving a written request for same on the other party. The parties shall, by mutual agreement, select a circuit court mediator as certified by the Supreme Court of Florida within 15 days of the date of the request for mediation. If the parties cannot agree on the selection of a circuit court mediator as certified by the Supreme Court of Florida, then the OWNER shall select the mediator, who shall be a circuit court mediator as certified by the Supreme Court of Florida. The mediator's fee shall be paid in equal shares by OWNER and CONTRACTOR.

SC-16.01C. Delete paragraph SC-16.01C of the General Conditions in its entirety and replace with the following:

C. CONTRACTOR shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings, unless otherwise agreed by CONTRACTOR and OWNER in writing.

ARTICLE 17 - MISCELLANEOUS

SC-17.01A. Delete paragraph SC-17.01A of the General Conditions in its entirety and replace with the following:

Notices: Any notice, request, demand, consent, approval, or other communication required or permitted by this Agreement shall be given or made in writing and shall be served, as elected by the party giving such notice, by any of the following methods: (a) Hand delivery to the other party; (b) Delivery by commercial overnight courier service; or (c) Mailed by registered or certified mail (postage prepaid), return receipt requested at the addresses of the parties shown in the Agreement. Notices shall be effective when received at the address as specified above. Email transmission is acceptable notice effective when received, provided, however, that email transmissions received (i.e., sent) after 5:00 p.m. or on weekends or holidays, will be deemed received on the next day that is not a weekend day or a holiday. The original of the notice must additionally be mailed. Either party may change its address, for the purposes of this paragraph, by written notice to the other party given in accordance with the provisions of this paragraph.

SC-17.07 through and including SC-17.14: Add the following new paragraphs after paragraph SC-17.06 of the General Conditions:

SC-17.07 Utilities. The CONTRACTOR shall, at its expense, arrange for, develop, and maintain all utilities in Work areas to meet the requirements of the Contract. Such utilities shall be furnished by CONTRACTOR at no additional cost to the OWNER, and shall include, but not be limited to the following: public telephone service for the CONTRACTOR'S use; construction power as required at each point of construction; and water as required throughout the construction. Prior to final acceptance of the Work the CONTRACTOR shall, at its expense, satisfactorily remove and dispose of all temporary utilities developed to meet the requirements of the Contract. The OWNER will assume the utility costs directly related to its usage of areas in which it has taken Beneficial Occupancy.

SC-17.08 Drainage. The CONTRACTOR shall so conduct its operations and maintain the Work in such condition that adequate drainage will be in effect at all times. Existing functioning storm sewers, gutters, ditches, and other run-off shall not be obstructed.

SC-17.09 Fire Hydrants. Fire hydrants on or adjacent to the highway shall be kept accessible to fire apparatus at all times and no material or obstruction shall be placed within fifteen feet (15-ft) of any such hydrant.

SC-17.10 Protection of Structures. Heavy equipment shall not be operated close enough to pipe headwalls or other structures to cause their displacement.

SC-17.11 Fencing. On all Work which includes fencing and where the ENGINEER determines it to be necessary for maintaining the security of livestock or adjacent property, or for protection of pedestrians who are likely to gain access to the Work from adjacent property, the CONTRACTOR shall erect an appropriate temporary security fence as a first order of business. Temporary fencing shall be installed at temporary construction easement areas on all commercial and residential properties appropriate to secure the Work area and protect persons and domestic animals. At all times, the CONTRACTOR shall conduct the Work under secure temporary fencing. Permanent fencing shall be addressed as required by the Plans and Specifications.

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SC-17.12 Record Drawings. The CONTRACTOR shall keep one record copy of all Specifications, Drawings, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. These items shall be available to the ENGINEER and shall be delivered to the ENGINEER for the OWNER. Record Drawings shall be submitted with each pay request. Record Drawings shall be submitted with each pay request. Final acceptance of the Work will be withheld until the approval of such documents are made by the OWNER.

SC-17.13 Progress Videotapes. CONTRACTOR shall deliver to the OWNER both prior to commencing the Project and before receipt of Final Payment, a DVD Type color videotape of the Project showing the site before and after Work has been completed. CONTRACTOR shall audibly identify on the videotape the station numbers as those areas of the Project are taped. The cost of the videotaping is included in the bid submitted by the CONTRACTOR.

SC-17.14 Commercial Activities. CONTRACTOR shall not establish any commercial activity or issue concessions or permits of any kind to third parties for establishing commercial activities on land owned or controlled by OWNER. CONTRACTOR shall not allow its employees to engage in any commercial activities on the Project site.

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PART II – FORMS TO BE USED DURING PROJECT CONSTRUCTION (Pages 18 through 48)

NOTICE OF AWARD – (Sample)
NOTICE TO PROCEED
FIELD ORDER
WORK CHANGE DIRECTIVE
CHANGE ORDER
APPLICATION FOR PAYMENT
CERTIFICATE OF SUBSTANTIAL COMPLETION
FINAL RELEASE OF LIEN
DUTIES RESPONSIBILITIES AND LIMITATIONS OF AUTHORITY OF
RESIDENT PROJECT REPRESENTATIVE

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(SAMPLE)

BOARD OF COUNTY COMMISSIONERS



November 13, 2018

via Email

Company

Attn:

Address

Address

Email address

NOTICE OF AWARD

Reference: *Indian River County Bid No.*
Bid Title

Dear Mr./Ms. :

It is my pleasure to inform you that on [DATE] the Board of County Commissioners awarded the above-referenced project to your company. The following documents are required before the applicable County department can issue a "Notice to Proceed" letter.

1. Public Construction Bond (unrecorded) in the amount of **100%** of the award amount (**\$.....**).
2. Two Signed Copies of Enclosed Agreement.
3. Certificate of Insurance indicating coverage required by Article 5 of the General Conditions (section 00700 of the bid documents) and Supplemental Conditions (Section 00800 of the bid documents). Certificate(s) **must name Indian River County as additional insured** and must provide for a 30-day Notice of Cancellation.
4. W-9.

The Public Construction Bond must be executed in accordance with section 255.05(1)(a), Florida Statutes. Please submit the Bond, W-9, the Certificate(s) of Insurance and two fully-executed copies of the enclosed agreement to this office at the address provided below no later than [Due **DATE (15 days from award)**]. Failure to comply with the established deadline for submittal of required documents may be grounds for cancellation of award.

Thank you for your prompt attention and if you have any questions, please do not hesitate to contact our office.

Sincerely,

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Jennifer Hyde
Purchasing Manager

Cc: Project Manager

Office of Management and Budget • Purchasing Division
1800 27th Street, Vero Beach, Florida 32960 • (772) 226-1416 • Fax: (772) 770-5140
E-mail: purchasing@ircgov.com

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NOTICE TO PROCEED

_____, 20__

CONTRACT FOR: INDIAN RIVER COUNTY LANDFILL SEGMENT 3 CELL 1 LANDFILL
GAS SYSTEM EXPANSION

CONTRACTOR: _____

Gentlemen:

You are hereby notified to commence work on the subject contract on or before _____, 20__ and are to fully complete the work within 210 calendar days. In accordance with the contract documents, the Substantial Completion date is _____, (180 days) with the Final Completion date being _____, 20__ (210 days). Extension in time will be by written change order only.

The contract provides for assessment of liquidated damages for each consecutive calendar day that the work remains incomplete after the above established substantial completion date the sum of \$450.00 and for each consecutive calendar day that the work remains incomplete after the above established final completion date the sum of \$400.00.

Indian River County, Florida
(OWNER)

By: _____
(Authorized Signature)

Himanshu H. Mehta, P.E., Managing Director
(Printed Name & Title of Above Signer)

NOTE: Attach this notice to your contract making it a part thereof.

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FIELD ORDER

PROJECT: _____

FIELD ORDER NO.: _____

DATE: _____

CONTRACT: _____

OWNER: _____

OWNER'S PROJECT NO.: _____

TO: _____

CONTRACT DATE: _____

.....
This Field Order is issued to interpret/clarify the Contract Documents, order minor changes in the work and/or memorialize trade-off agreements. Both parties hereby agree that the work described by this Field Order is to be accomplished without change in Contract Sum, Contract Time, and/or claims for other costs.
.....

DESCRIPTION: (Here insert a written description of the interpretation, change or agreement.)

.....
FIELD ENGINEER: _____

CONTRACTOR: _____

BY: _____

BY: _____

DATES: _____

DATE: _____

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WORK CHANGE DIRECTIVE

No. _____

PROJECT: DATE OF ISSUANCE:

OWNER:
(Name, Address)

CONTRACTOR:

OWNER'S Project No.: _____

ENGINEER:

CONTRACT FOR:

ENGINEER's Project No.: _____

You are directed to proceed with the following change(s):

Description: _____

Purpose of Work Directive Change: _____

Attachment(s) (list documents supporting change):

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:
Time:

Method of determining change in Contract

Time and Materials

Contractor's records

Unit Prices

Engineer's records

Cost plus fixed fee

Other _____

Estimated increase (decrease) in Contract Price
\$_____. If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Estimated increase (decrease) in Contract Time
_____ days. If the change involves an increase, the estimated time is not to be exceed without further authorization.

Once the Work covered by the directive is completed or final cost and time determined, CONTRACTOR should submit documentation for inclusion in a change Order.

THIS IS A DIRECTIVE TO PROCEED WITH A CHANGE THAT MAY AFFECT THE CONTRACT PRICE OR THE CONTRACT TIME. A CHANGE ORDER, IF ANY, SHOULD BE CONSIDERED PROMPTLY.

RECOMMENDED:

APPROVED:

By: _____
ENGINEER

By: _____
OWNER

Date: _____

Date: _____

WORK CHANGE DIRECTIVE

INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed for use in situations involving changes in the Work which, if not processed expeditiously, might delay the Project. These changes are often initiated in the field and may affect the Contract Price or the Contract Times. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order.

For supplemental instructions and minor changes not involving a change in the Contract Price or the Contract Times a Field Order should be used.

B. COMPLETING THE WORK CHANGE DIRECTIVE FORM

ENGINEER initiates the form, including a description of the items involved and attachments.

Based on conversations between ENGINEER and CONTRACTOR, ENGINEER completes the following:

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT PRICE: Mark the method to be used in determining the final cost of Work involved and the estimated net effect on the Contract Price. If change involves an increase in the Contract Price and the estimated amount is approached before the additional or changed Work is completed, another Work Change Directive must be issued to change the estimated price or CONTRACTOR may stop the changed Work when the estimates time is reached. If Work Change Directive is not likely to change the Contract Price, the space for estimated increase (decrease) should be marked "Not Applicable".

Once ENGINEER has completed and signed the form, all copies should be sent to OWNER for authorization because ENGINEER alone does not have authority to authorize changes in Price or Times. Once authorized by OWNER, a copy should be sent by ENGINEER to CONTRACTOR. Price and Times may only be changed by Change Order signed by OWNER and CONTRACTOR with ENGINEER'S recommendation.

Paragraph 10.03.A.2 of the General Conditions requires that a Change Order be initiated and processed to cover any undisputed sum or amount of time for Work actually performed pursuant to this Work Change Directive.

Once the Work covered by this directive is completed or final cost and times are determined, CONTRACTOR should submit documentation for inclusion in a Change Order.

THIS IS A DIRECTIVE TO PROCEED WITH A CHANGE THAT MAY AFFECT THE CONTRACT PRICE OR CONTRACT TIMES. A CHANGE ORDER, IF ANY, SHOULD BE CONSIDERED PROMPTLY.

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CHANGE ORDER

No. _____

PROJECT Segment 3 Cell 1 Landfill Gas System Expansion -IRC BID NO. 2021006

DATE OF ISSUANCE _____ EFFECTIVE DATE _____

OWNER _____

OWNER'S Contract No. _____ CDM Smith Project No. _____

CONTRACTOR _____ ENGINEER CDM Smith Inc.

You are directed to make the following changes in the Contract Documents:

Description: _____

Reason for change order: _____

Attachments: (List documents supporting change)

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIME
Original Contract Price \$ _____	Original Contract Times Substantial Completion: _____ Ready for final payment: _____ Days or dates
Net changes from previous Change Orders No. ___ to No. _____ \$ _____	Net change from previous Change Orders No. ___ to No. _____ _____ days
Contract Price prior to this Change Order \$ _____	Contract Time prior to this Change Order Substantial Completion: _____ Ready for final payment: _____ Days or dates
Net Increase (decrease) in this Change Order \$ _____	Net Increase in this Change Order _____ days
Contract Price with all approved Change Orders \$ _____	Contract Time with all approved Change Orders Substantial Completion: _____ Ready for final payment: _____ Days or dates

RECOMMENDED: _____ APPROVED: _____ ACCEPTED: _____
By: _____ By: _____ By: _____

ENGINEER (Authorized Signature) OWNER (Authorized Signature) CONTRACTOR (Authorized Signature)

Date: _____ Date: _____ Date: _____

EJCDC No. C-800 (2007 Edition)

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General CONTRACTORs of America.

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CHANGE ORDER

INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

ENGINEER normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by CONTRACTOR, or requests from OWNER, or both.

Once ENGINEER has completed and signed the form, all copies should be sent to OWNER or CONTRACTOR for approval, depending on whether the Change Order is a true order to the CONTRACTOR or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. ENGINEER should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

SECTION 00800 - CONTRACTOR'S Application for Partial Payment

Application for Payment No. _____
For Work Accomplished through the period of _____ through _____

To: _____ (OWNER)
From: _____ (CONTRACTOR)
Contract: _____
Project: _____
OWNER'S Contract No. _____ ENGINEER'S Project No. _____
ENGINEER _____

(1) Attach detailed schedule and copies of all paid invoices.

1.	Original Contract Price:	\$	_____
2.	Net change by Change Orders and Written Amendments (+ or -):	\$	_____
3.	Current Contract Price (1 plus 2):	\$	_____
4.	Total completed and stored to date:	\$	_____
5.	Retainage (per Agreement):		
	_____ % of completed Work:	\$	_____
	_____ % of retainage:	\$	_____
	Total Retainage:	\$	_____
6.	Total completed and stored to date less retainage (4 minus 5):	\$	_____
7.	Less previous Application for Payments:	\$	_____
8.	DUE THIS APPLICATION (6 MINUS 7):	\$	_____

CONTRACTOR'S CERTIFICATION:

UNDER PENALTY OF PERJURY, the undersigned CONTRACTOR certifies that (1) the labor and materials listed on this request for payment have been used in the construction of this Work; (2) payment received from the last pay request has been used to make payments to all subcontractors, laborers, materialmen and suppliers except as listed on Attachment A, below; (3) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to OWNER indemnifying OWNER against any such Lien, security interest or encumbrance); (4) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective; and (5) If this Periodic Estimate is for a Final Payment to project or improvement, I further certify that all persons doing work upon or furnishing materials or supplies for this project or improvement under this foregoing contract have been paid in full, and that all taxes imposed by Chapter 212 Florida Statutes, (Sales and Use Tax Act, as Amended) have been paid and discharged, and that I have no claims against the OWNER.

Attached to or submitted with this form are:

- Signed release of lien forms (partial or final as applicable) from all subcontractors, laborers, materialmen and suppliers except as listed on Attachment A, together with an explanation as to why any release of lien form is not included;
- Updated Construction Schedule per [Specification Section 01310](#), and

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Dated _____

By: _____
(CONTRACTOR – must be signed by
an Officer of the Corporation)

Print Name and Title

STATE OF FLORIDA
COUNTY OF INDIAN RIVER

Before me, a Notary Public, duly commissioned, qualified, and acting, personally appeared _____, who being by me first duly sworn upon oath, says that he/she is the _____ of the CONTRACTOR mentioned above and that he/she has been duly authorized to act on behalf of it, and that he/she executed the above Contractor’s Application for Payment and Contractor’s Certification statement on behalf of said CONTRACTOR; and that all of the statements contained herein are true, correct, and complete. Subscribed and sworn to before me this ____ day of _____, 20____.

_____ is personally known to me or has produced _____ as identification.

NOTARY PUBLIC: _____

(SEAL)

Printed name: _____

Commission No.: _____

Commission Expiration: _____

[The remainder of this page was left blank intentionally]

SURETY'S CONSENT OF PAYMENT TO CONTRACTOR:

The Surety, _____
_____, a
corporation, in accordance with Public Construction Bond Number _____,
hereby consents to payment by the OWNER to the CONTRACTOR, for the amounts
specified in this CONTRACTOR'S APPLICATION FOR PAYMENT.

TO BE EXECUTED BY CORPORATE SURETY:

Attest:

Secretary

Corporate Surety

Business Address

BY: _____
Print Name: _____
Title: _____

(Affix Corporate SEAL)

STATE OF FLORIDA
COUNTY OF INDIAN RIVER

Before me, a Notary Public, duly commissioned, qualified, and acting, personally appeared _____, to me well known or who produced _____ as identification, who being by me first duly sworn upon oath, says that he/she is the _____ for _____ and that he/she has been authorized by _____ it to approve payment by the OWNER to the CONTRACTOR of the foregoing Contractor's Application for Payment. Subscribed and sworn to before me this _ day of _____, 20 ____.

Notary Public, State of _____
My Commission Expires: _____

[The remainder of this page was left blank intentionally]

CERTIFICATION OF ENGINEER:

I certify that I have reviewed the above and foregoing Periodic Estimate for Partial Payment; that to the best of my knowledge and belief it appears to be a reasonably accurate statement of the work performed and/or material supplied by the Contractor. I am not certifying as to whether or not the Contractor has paid all subcontractors, laborers, materialmen and suppliers because I am not in a position to accurately determine that issue.

Dated _____

SIGNATURE

CERTIFICATION OF INSPECTOR:

I have checked the estimate against the Contractor's Schedule of Amounts for Contract Payments and the notes and reports of my inspections of the project. To the best of my knowledge, this statement of work performed and/or materials supplied appears to be reasonably accurate, that the Contractor appears to be observing the requirements of the Contract with respect to construction, and that the Contractor should be paid the amount requested above, unless otherwise noted by me. I am not certifying as to whether or not the Contractor has paid all subcontractors, laborers, materialmen and suppliers because I am not in a position to accurately determine that issue.

Dated _____

SIGNATURE

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SECTION 00800
CONTRACTOR'S APPLICATION FOR FINAL PAYMENT

Application for Payment No. _____
For Work Accomplished through the period of _____ through _____

To: _____
(OWNER)
From: _____
(CONTRACTOR)
Contract: _____
Project: Segment 3 Cell 1 Landfill Gas System Expansion
OWNER'S Contract No. BID NO. 2021006 ENGINEER'S Project No. _____
ENGINEER CDM Smith Inc.

(1) Attach detailed schedule and copies of all paid invoices.

1.	Original Contract Price:	\$	_____
2.	Net change by Change Orders and Written Amendments (+ or -):	\$	_____
3.	Current Contract Price (1 plus 2):	\$	_____
4.	Total completed and stored to date:	\$	_____
5.	Retainage (per Agreement):		
	_____ % of completed Work:	\$	_____
	_____ % of retainage:	\$	_____
	Total Retainage:	\$	_____
6.	Total completed and stored to date less retainage (4 minus 5):	\$	_____
7.	Less previous Application for Payments:	\$	_____
8.	DUE THIS APPLICATION (6 MINUS 7):	\$	_____

CONTRACTOR'S CERTIFICATION:

I hereby certify that the labor and materials listed on this request for payment have been used in the construction of this work and payment received from the last request for payment has been used to make payments to all subcontractors, laborers, material men and suppliers, except as noted below.

The acceptance of final payment shall be and shall operate as a release of the OWNER from all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this Work and for every act and neglect of the OWNER and others relating to or arising out of this Work. Any payment, however, final, or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the Contract Documents or the Payment and Performance Bonds.

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Dated _____

(CONTRACTOR)

By: _____

State of _____.

County of _____.

Subscribed and sworn to before me this _____.

day of _____.

Notary Public

My Commission expires: _____.

CERTIFICATION OF ARCHITECT OR CONSULTING ENGINEER (WHERE APPLICABLE):

I certify that I have checked and verify the above and foregoing Periodic Estimate for Partial Payment; that to the best of my knowledge and belief it is a true and correct statement of the work performed and/or material supplied by the CONTRACTOR.

Dated _____

(ARCHITECT / ENGINEER) SIGNATURE

CERTIFICATION OF ENGINEER / INSPECTOR:

I have checked the estimate against the CONTRACTOR'S Schedule of Amounts for Contract Payments and the notes and reports of my inspections of the project. It is my opinion that this statement of work performed and/or materials supplied is accurate, that the CONTRACTOR is observing the requirements of the Contract, and that the CONTRACTOR should be paid the amount requested above.

Dated _____

(ARCHITECT / ENGINEER) SIGNATURE

Accompanying Documentation: _____

APPLICATION FOR PAYMENT INSTRUCTIONS

A. GENERAL INFORMATION

The sample form of Schedule of Values is intended as a guide only. Many projects require a more extensive form with space for numerous items, descriptions of Change Orders, identification of variable quantity adjustments, summary of materials and equipment stored at the site and other information. It is expected that a separate form will be developed by ENGINEER and CONTRACTOR at the time CONTRACTOR'S schedule of Values is finalized. Note also that the format for retainage must be changed if the Contract permits (or the law provides), and CONTRACTOR elects to deposit securities in lieu of retainage. Refer to Article 14 of the General Conditions for provisions concerning payments to CONTRACTOR.

B. COMPLETING THE FORM

The Schedule of Values, submitted and approved as provided in paragraphs 2.05.B.3 and 2.07 of the General Conditions, should be reproduced as appropriate in the space indicated on the Application for Payment form. Note that the cost of materials and equipment is often listed separately from the cost of installation. Also, note that each Unit Price is deemed to include CONTRACTOR'S overhead and profit.

All Change Orders affecting the Contract Price should be identified and included in the Schedule of Values as required for progress payments.

The form is suitable for use in the Final Application for Payment as well as for Progress Payments; however, the required accompanying documentation is usually more extensive for final payment. All accompanying documentation should be identified in the space provided on the form.

C. LEGAL REVIEW

All accompanying documentation of a legal nature, such as Lien Waivers, should be reviews by an attorney, and ENGINEER should so advise OWNER.

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CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT: INDIAN RIVER COUNTY LANDFILL SEGMENT 3 CELL 1 LANDFILL GAS SYSTEM EXPANSION

DATE OF ISSUANCE

OWNER Indian River County Board of County Commissioners

OWNER'S Contract No. BID NO 2021006 **CDM Smith Project No.** _____

CONTRACTOR _____ **ENGINEER** CDM Smith Inc.

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

To: _____
OWNER

And To _____
CONTRACTOR

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the contract Documents on

DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within _____ Days of the above date of Substantial Completion.

EJCDC No. C-800 (2007 Edition)
Prepared by the Engineers Joint Contract Documents Committee and endorsed by The Associated General CONTRACTORS of America.

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From the date of Substantial Completion, the responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees shall be as follows:

RESPONSIBILITIES:

OWNER: _____

CONTRACTOR: _____

The following documents are attached to and made a part of this Certificate:

[For items to be attached see definition of Substantial Completion as supplemented and other specifically noted conditions precedent to achieving Substantial Completion as required by Contract Documents.]

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR'S obligation to complete the Work in accordance with the Contract Documents.

Executed by ENGINEER on _____

ENGINEER

By: _____
(Authorized Signature)

CONTRACTOR accepts this Certificate of Substantial Completion on _____, 20__

CONTRACTOR

By: _____

OWNER accepts this Certificate of Substantial Completion on _____, 20__

OWNER

By: _____
(Authorized Signature)

FINAL RELEASE OF LIEN

KNOW ALL MEN BY THESE PRESENTS, that

(Company Name)

The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER from all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with the work under this Contract and for every act and neglect of the OWNER and others relating to or arising out of the work.

for all in consideration of

_____dollars (\$_____)
(Total Amount of Contract)

paid to _____ by receipt of which is hereby acknowledged,
(Me/Us)

do _____ hereby release and quit claim to the OWNER, its successors
(I/We)

or assigns, all liens, lien rights, claims or demands of any kind whatsoever

which _____ now have or might have against the property, building, and/ or
(I/We)

for any incidental expense for the construction of

(Project Number)

INDIAN RIVER COUNTY LANDFILL SEGMENT 3 CELL1 LANDFILL GAS SYSTEM
EXPANSION

(Project Name)

thereon or in otherwise improving said property situated as above described.

IN WITNESS WHEREOF I have hereunto set my hand and seal this ____ day of _____, 20__.

(SEAL)

By _____

WITNESS:

Title _____

DUTIES, RESPONSIBILITIES AND LIMITATIONS OF AUTHORITY
OF RESIDENT PROJECT REPRESENTATIVE

1. GENERAL

Resident Project Representative is ENGINEER'S Agent, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding his actions. Resident Project Representative's dealings in matters pertaining to the on-site Work shall in general be only with ENGINEER and CONTRACTOR, and dealings with Subcontractors shall only be through or with the full knowledge of CONTRACTOR. Written communication with OWNER will be only through or as directed by ENGINEER.

2. DUTIES AND RESPONSIBILITIES

Resident Project Representative will:

1. Schedules: Review the progress schedule, schedule of Shop Drawing submissions and schedule of values prepared by CONTRACTOR and consult with ENGINEER concerning their acceptability.
2. Conferences: Attend preconstruction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with ENGINEER and notify those expected to attend in advance. Attend meetings, and maintain and circulate copies of minutes thereof.
3. Liaison:
4. Serve as ENGINEER'S liaison with CONTRACTOR, working principally through CONTRACTOR'S superintendent and assist him in understanding the intent of the Contract Documents. Assist ENGINEER in serving as OWNER'S liaison with CONTRACTOR when CONTRACTOR'S operations affect OWNER'S on-site operations.
5. As requested by ENGINEER, assist in obtaining from OWNER additional details or information, when required at the job site for proper execution of the Work.
6. Shop Drawings and Samples:
 - a. Receive and record date of receipt of Shop Drawings and samples, receive samples which are furnished at the site by CONTRACTOR, and notify ENGINEER of their availability for examination.
 - b. Advise ENGINEER and CONTRACTOR or his superintendent immediately of the commencement of any Work requiring a Shop Drawing or sample submission if the submission has not been approved by the ENGINEER.
7. Review of Work, Rejection of Defective Work, Inspections and Tests:
 - a. Conduct on-site observations of the Work in progress to assist ENGINEER in determining if the Work is proceeding in accordance with the Contract Documents and that completed Work will conform to the Contract Documents.
 - b. Report to ENGINEER whenever he believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or does not meet the requirements of any inspections, tests or approval required to be made or has been damaged prior to final payment; and advise ENGINEER when he believes Work should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 - c. Verify that tests, equipment and systems startups and operating and maintenance instructions are conducted as required by the Contract Documents and in presence of the required personnel, and that CONTRACTOR maintains adequate

- records thereof; observe, record and report to ENGINEER appropriate details relative to the test procedures and startups.
- d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the outcome of these inspections and report to ENGINEER.
8. Interpretation of Contract Documents: Transmit to CONTRACTOR engineer's clarifications and interpretations of the Contract Documents.
9. Modifications: Consider and evaluate CONTRACTOR'S suggestions for modifications in Drawings or Specifications and report them with recommendations to ENGINEER.
10. Records:
- a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples submissions, reproductions of original Contract Documents including all Addenda, change orders, field orders, additional Drawings issued subsequent to the execution of the Contract, ENGINEER'S clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.
- b. Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions, list of visiting officials and representatives of manufacturers, fabricators, suppliers and distributors, daily activities, decisions, observations in general and specific observations in more detail as the case of observing test procedures. Send copies to ENGINEER.
- c. Record names, addresses and telephone numbers of all contractors, Subcontractors and major suppliers of materials and equipment.
11. Reports:
- a. Furnish ENGINEER periodic reports as required of progress of the Work and CONTRACTOR'S compliance with the approved progress schedule and schedule of Shop Drawing submissions.
- b. Consult with ENGINEER in advance of scheduled major tests, inspections or start of important phases of the Work.
- c. Report immediately to ENGINEER upon the occurrence of any accident.
12. Payment Requisitions: Review applications for payment with CONTRACTOR for compliance with the established procedure for their submission and forward them with recommendations to ENGINEER, noting particularly their relation to the schedule of values, Work completed and materials and equipment delivered at the site but not incorporated in the Work.
13. Certificates, Maintenance and Operation Manuals: During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by CONTRACTOR are applicable to the items actually installed; and deliver this material to ENGINEER for his review and forwarding to OWNER prior to final acceptance of the Work.
14. Completion:
- a. Before ENGINEER issues a Certificate of Substantial Completion, submit to CONTRACTOR a list of observed items requiring completion or correction.
- b. Conduct final inspection in the company of ENGINEER, OWNER and CONTRACTOR and prepare a final list of items to be completed or corrected.
- c. Verify that all items on final list have been completed or corrected and make recommendations to ENGINEER concerning acceptance.

C. LIMITATIONS OF AUTHORITY

Except upon written instructions of ENGINEER, Resident Project Representative:

1. Shall not authorize any deviation from the Contract Documents or approve any substitute materials or equipment.
2. Shall not exceed limitations on ENGINEER'S authority as set forth in the Contract Documents.
3. Shall not undertake any of the responsibilities of CONTRACTOR, Subcontractors or CONTRACTOR'S superintendent, or expedite the Work.
4. Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents.
5. Shall not advise on or issue directions as to safety precautions and programs in connection with the Work.
6. Shall not authorize OWNER to occupy the Project in whole or in part.
7. Shall not participate in specialized field or laboratory tests.

END OF SECTION 00800

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Project information.
- 2. Work covered by Contract Documents.
- 3. Contractor's use of site and premises.
- 4. Coordination with occupants.
- 5. Work restrictions.
- 6. Specification and Drawing conventions.
- 7. Miscellaneous provisions.

- B. Related Requirements:

- 1. Section 017300 "Execution" for coordination of Owner-installed products.

1.3 DEFINITIONS

- A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

- A. Project Identification: Indian River County Landfill Segment 3 Cell 1 Landfill Gas System Expansion.

- 1. Project Location: 1325 74th Avenue SW, Vero Beach, Florida 32968.

- B. Owner: Indian River County Solid Waste Disposal District.

- 1. Owner's Representative: Himanshu Mehta, P.E.; (772) 226-3211.

- C. Engineer: CDM Smith Inc.

- 1. Engineer's Representative: Martin Lewis, P.E., BCEE, PMP; (772) 231-4301 or (772) 360-3230.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
1. Installation of new landfill gas collection headers and laterals; vertical wells; sideslope collectors; wellheads and fittings for vertical wells and sideslope collectors to connect to headers; compressed air and force main piping, fittings, valves, and ancillary components; well dewatering pumps; and start-up and testing of the landfill gas system expansion, and other Work indicated in the Contract Documents.
- B. Type of Contract:
1. Project will be constructed under a single prime contract.

1.6 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Restricted Use of Site: 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.
- B. Limits on 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 on Use of Site: Confine construction operations to limits shown on Drawings.
 2. Site is an active landfill. Maintain access for landfill waste filling operations and traffic.
- C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy Project site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 2. Maintain two-way (20 feet wide) access to the Class I Landfill for all vehicles including semi-trailer trucks.
 3. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work to between 7 a.m. to 6 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
 - 1. Notify Engineer and Owner not less than two days in advance of proposed utility interruptions.
 - 2. Obtain Engineer's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Engineer not less than two days in advance of proposed disruptive operations.
 - 2. Obtain Engineer's written permission before proceeding with disruptive operations.

1.9 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. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 - 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
 - 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

- D. 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 scheduled on Drawings.
 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

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 governing allowances.
- B. Types of allowances include the following:
 - 1. Contingency allowances.
- C. Related Requirements:
 - 1. Section 012200 "Unit Prices" for procedures for using unit prices, including adjustment of quantity allowances when applicable.
 - 2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 3. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

1.3 DEFINITIONS

- A. Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.4 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Engineer of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.
- B. At Engineer's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Engineer from the designated supplier.

1.5 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.6 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.7 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Engineer for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.8 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, required maintenance materials, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
 - 3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
 - 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

- B. Submit claims for increased costs due to a change in the scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
 - 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
 - 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No.1: Contingency Allowance: Include a contingency allowance of 10 percent of the sum of Bid Items 1, 2, and 3 for use according to Owner's written instructions.

END OF SECTION 012100

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6706-250111
November 2020

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SECTION 012200 - UNIT PRICES (MEASUREMENT AND PAYMENT)

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 unit prices.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for procedures for using unit prices to adjust quantity allowances.
 - 2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 3. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

- A. Unit price is a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

- E. No payment shall be made to items not shown on the Drawings or described in the Specifications unless specifically approved by the Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1A.a - Site Preparation.

1. Description: Site preparation, preparation of staging areas, and installation of erosion and sedimentation control devices.
2. Unit of Measurement: Lump sum
Payment: Full compensation for all labor, material, and incidentals required to perform site preparation as shown on the Drawings and described in the Specifications.

B. Unit Price No. 1A.b. - SDR 17 HDPE Solid Pipe and Fittings:

1. Description: 24-inch (b.1), 18-inch (b.2), 12-inch (b.3), 8-inch (b.4), 6-inch (b.5), and 4-inch (b.6) SDR 17 HDPE Pipe and Fittings in accordance with Section 310529 "High Density Polyethylene Pipe for Landfill Gas Collection Systems" and the Drawings.
2. Unit of Measurement: Linear feet furnished and installed as shown on Drawings and measured in place by as-built survey.
3. Payment: Full compensation for furnishing and installing the pipe and all necessary fittings including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.

C. Unit Price No. 1A.c. – Vertical Extraction Well:

1. Description: Vertical landfill gas extraction well in accordance with Section 335133 "Landfill Gas Extraction Wells" and the Drawings.
2. Unit of Measurement: Vertical feet furnished and installed as shown on Drawings and measured in place based on well drilling logs that are reviewed and approved by Engineer.
3. Payment: Full compensation for furnishing and installing the vertical landfill gas extraction wells including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.

D. Unit Price No. 1A.d.1. – Sideslope Collector 40 mil textured HDPE Geomembrane:

1. Description: Sideslope Collector 40 mil textured HDPE Geomembrane in accordance with Section 330511 "Sideslope Collector" and the Drawings.
2. Unit of Measurement: Square feet furnished and installed as shown on Drawings and measured in place.

3. Payment: Full compensation for furnishing and installing the sideslope collector 40 mil textured HDPE geomembrane including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.
- E. Unit Price No. 1A.d.2. – Sideslope collector 6-inch SDR 11 HDPE solid pipe and fittings in rock:
1. Description: Sideslope collector 6-inch SDR 11 HDPE solid pipe and fittings in rock in accordance with Section 330511 "Sideslope Collector" and the Drawings.
 2. Unit of Measurement: Linear feet furnished and installed as shown on Drawings and measured in place based on as-built surveys.
 3. Payment: Full compensation for furnishing and installing the sideslope collector 6-inch SDR 11 HDPE pipe and fittings in rock including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.
- F. Unit Price No. 1A.d.3. – Sideslope collector 6-inch SDR 11 HDPE solid pipe and fittings in common fill:
1. Description: Sideslope collector 6-inch SDR 11 HDPE solid pipe and fittings in common fill in accordance with Section 330511 "Sideslope Collector" and the Drawings.
 2. Unit of Measurement: Linear feet furnished and installed as shown on Drawings and measured in place based on as-built surveys.
 3. Payment: Full compensation for furnishing and installing sideslope collector 6-inch SDR 11 HDPE solid pipe and fittings in common fill including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.
- G. Unit Price No. 1A.d.4. – Sideslope collector 6-inch SDR 11 HDPE perforated pipe and fittings in rock:
1. Description: Sideslope collector 6-inch SDR 11 HDPE perforated pipe and fittings in rock in accordance with Section 330511 "Sideslope Collector" and the Drawings.
 2. Unit of Measurement: Linear feet furnished and installed as shown on Drawings and measured in place based on as-built surveys.
 3. Payment: Full compensation for furnishing and installing sideslope collector 6-inch SDR 11 HDPE perforated pipe and fittings in rock including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.
- H. Unit Price No. 1A.e.1. – Well Head:
1. Description: Well Head in accordance with Section 400564 "Landfill Gas Wellheads, Valves, and Appurtenances" and the Drawings.
 2. Unit of Measurement: Each well head furnished and installed as shown on Drawings and measured in place.
 3. Payment: Full compensation for furnishing and installing including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.

- I. Unit Price No. 1A.e.2. – Miscellaneous Valves and Fittings:
1. Description: Miscellaneous Valves and Fittings in accordance with Section 400564 "Landfill Gas Wellheads, Valves, and Appurtenances" and the Drawings.
 2. Unit of Measurement: Lump sum for any valves and fittings not included in the listed items.
 3. Payment: Full compensation for furnishing and installing miscellaneous valves and fittings including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.
- J. Unit Price No. 1A.e.3. – Access Riser with Fernco Cap:
1. Description: Access Riser with Fernco Cap in accordance with the Drawings.
 2. Unit of Measurement: Each access riser with Fernco cap furnished and installed as shown on Drawings and measured in place.
 3. Payment: Full compensation for furnishing and installing each access riser with Fernco cap including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.
- K. Unit Price No. 1A.e.4. – Zone Valve:
1. Description: Zone Valve in accordance with Section 400564 "Landfill Gas Wellheads, Valves, and Appurtenances" and the Drawings.
 2. Unit of Measurement: Each zone valve furnished and installed as shown on Drawings and measured in place.
 3. Payment: Full compensation for furnishing and installing each zone valve including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.
- L. Unit Price No. 1A.f.1. – 2-inch SDR 11 HDPE Compressed Air and Condensate Force Main Pipe (same trench as landfill gas pipe):
1. Description: 2-inch SDR 11 HDPE Pipe and Fittings in accordance with Section 310529 "High Density Polyethylene Pipe for Landfill Gas Collection Systems" and the Drawings.
 2. Unit of Measurement: Linear feet furnished and installed as shown on Drawings and measured in place based on as-built surveys.
 3. Payment: Full compensation for furnishing and installing 2-inch SDR 11 HDPE Compressed Air and Condensate Force Main Pipe including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.
- M. Unit Price No. 1A.f.2. – 2-inch Compressed Air and Force Main Valve Assembly:
1. Description: 2-inch Compressed Air and Force Main Valve Assembly in accordance with Section 400564 "Landfill Gas Wellheads, Valves, and Appurtenances" and the Drawings.
 2. Unit of Measurement: Each valve assembly furnished and installed as shown on Drawings and measured in place.

3. Payment: Full compensation for furnishing and installing including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.

N. Unit Price No. 1A.f.3. – Well Dewatering Pump Assembly:

1. Description: Well Dewatering Pump Assembly in accordance with Section 432515 “Pneumatic Pump System” and the Drawings.
2. Unit of Measurement: Each well dewatering pump assembly furnished as shown on Drawings.
3. Payment: Full compensation for furnishing and installing including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.

O. Unit Price No. 1A.f.4. – Well Dewatering Pump Installation:

1. Description: Well Dewatering Pump Installation in accordance with Section 432515 “Pneumatic Pump System” and the Drawings.
2. Unit of Measurement: Each well dewatering pump assembly installed as shown on Drawings and measured in place.
3. Payment: Full compensation for furnishing and installing including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.

P. Unit Price No. 1B. – Survey:

1. Description: Survey
2. Unit of Measurement: Lum sum for all of the project survey required for the project. The survey activities (All Bid Items) shall include surveying of existing conditions prior to construction; surveying for all pipe alignment; as-built surveys of all piping, horizontal and vertical wells, gas header pipes, condensate and compressed air lines and all items identified in Section 017300; a final survey and any surveying needed throughout the duration of the project.
3. Payment: Full compensation for all labor, materials, tools, equipment, and incidentals required to perform all of the project survey as described in the Specifications.

Q. Alternate Bid Item 1 – Access Risers with Blind Flange Cap:

1. Description: Access Risers with Blind Flange Cap
2. Unit of Measurement: Each – If selected by Owner, additional cost per access riser to install a welded blind flange with bolt on cap instead of a Fernco cap.
3. Payment: Full compensation for furnishing and installing including labor, material, equipment, supervision, and incidentals necessary to perform the work required to successfully install the product as shown on the Drawings and described in the Specifications.

END OF SECTION 012200

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6706-250111
November 2020

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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.
- B. Related Requirements:
 - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
 - 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 to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit documentation identifying 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 form acceptable to Engineer.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination of 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 substitutions 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 as well as names and addresses of Engineers and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Detailed comparison of Contractor's construction schedule using proposed substitutions 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.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. 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.
 - l. 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. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Engineer 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 Engineer's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Engineer 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.

1.7 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: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer 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: Engineer will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.
1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.

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- j. 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.

PART 2 - PRODUCTS (NOT USED)

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.
 - 2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

- A. Engineer will issue Field Orders authorizing minor changes in the Work, not involving adjustment to the Contract Price or the Contract Time, on form included in Project Manual.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Price or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Requests For Proposal (RFP) issued by Engineer 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 RFP, submit a quotation estimating adjustments to the Contract Price 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.
 - 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 Engineer.
- 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 Engineer.
- 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 Price 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 Engineer.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Price to reflect actual costs of allowances.
- B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Change Order Request, Engineer will issue a Change Order for signatures of Owner and Contractor on form included in Project Manual.

1.7 WORK CHANGE DIRECTIVE

- A. Work Change Directive: Engineer may issue a Work Change Directive on form included in Project Manual. 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 Price or the Contract Time.

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- B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.
 - 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

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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 012200 "Unit Prices."
 - 2. Section 012600 "Contract Change Procedures" for administrative procedures for handling changes to the Contract.
 - 3. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

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 items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Engineer at earliest possible date, but no later than ten days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
 - 4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
 - 5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment

requests, provide subschedules showing values coordinated with the scope of each design services contract, as described in Section 011000 "Summary."

- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Owner's name.
 - c. Owner's Project number.
 - d. Name of Engineer.
 - e. Engineer's Project number.
 - f. Contractor's name and address.
 - g. Date of submittal.
 2. Arrange schedule of values consistent with format of EJCDC Document C-620.
 3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 7. Purchase Contracts: Provide a separate line item in the schedule of values for each Purchase contract. Show line-item value of Purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.
 8. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
 9. Overhead Costs, Separate Line Items: Show cost of temporary facilities and other major cost items that are not direct coat of actual work-in-place as separate line items.

10. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
11. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
12. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

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 Engineer and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. 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 Engineer by the 25th of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
 1. Submit draft copy of Application for Payment twenty days prior to due date for review by Engineer.
- D. Application for Payment Forms: Use form provided in Project Manual as form for Applications for Payment.
 1. Other Application for Payment forms proposed by the Contractor may be acceptable to Engineer and Owner. Submit forms for approval with initial submittal of schedule of values.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer 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.
 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 Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- G. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Engineer 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 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.
- I. Maintain an updated set of drawings to be used as record drawings in accordance with Section 017839. As a prerequisite for monthly progress payments, exhibit the updated record drawings for review by Owner and Engineer for completeness and accuracy.
- 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.
 4. Combined Contractor's construction schedule incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
 5. Products list (preliminary if not final).
 6. Sustainable design action plans, including preliminary project materials cost data.
 7. Schedule of unit prices.

8. Submittal schedule.
 9. List of Contractor's staff assignments.
 10. List of Contractor's principal consultants.
 11. Copies of building permits.
 12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 13. Initial progress report.
 14. Report of preconstruction conference.
- K. Application for Payment at Substantial Completion: After Engineer 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.
 - a. Complete administrative actions, submittals, and Work proceeding this application, as described in Section 017700 "Closeout Procedures."
 2. Include initial submittal of closeout record drawings in accordance with Section 017839.
 3. 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. Certification of completion of final punch list items.
 3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 4. Final submittal of closeout record drawings in accordance with Section 017839.
 5. Updated final statement, accounting for final changes to the Contract Sum.
 6. Evidence that claims have been settled.
 7. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 8. Final liquidated damages settlement statement.
 9. Proof that taxes, fees, and similar obligations are paid.
 10. Waivers and releases.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012900

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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. RFIs.
 4. Digital project management procedures.
 5. Web-based Project management software package.
 6. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request for Information. Request from Owner, Engineer, 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, telephone number, and email address 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, 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 in prominent location inbuilt facility. 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.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.

1.6 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Engineer will return without response those RFIs submitted to Engineer by other entities controlled by Contractor.
 2. Coordinate and submit RFIs in a prompt manner 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. Owner name.
 3. Owner's Project number.
 4. Name of Engineer.
 5. Engineer's Project number.
 6. Date.
 7. Name of Contractor.
 8. RFI number, numbered sequentially.
 9. RFI subject.
 10. Specification Section number and title and related paragraphs, as appropriate.
 11. Drawing number and detail references, as appropriate.
 12. Field dimensions and conditions, as appropriate.
 13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 14. Contractor's signature.
 15. 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: Form provided by Engineer.
1. Attachments shall be electronic files in PDF format.
- D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven days for Engineer's response for each RFI. RFIs received by Engineer 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 Engineer's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt by Engineer of additional information.
 3. Engineer'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 Change Procedures."

- a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 5 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 monthly. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Engineer.
 4. RFI description.
 5. Date the RFI was submitted.
 6. Date Engineer's response was received.
 7. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 8. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.
- F. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within seven days if Contractor disagrees with response.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Engineer's Data Files Not Available: Engineer will not provide Engineer's CAD drawing digital data files for Contractor's use during construction.
- B. Use of Engineer's Digital Data Files: Digital data files of Engineer's CAD drawings will be provided by Engineer for Contractor's use during construction.
1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
 2. Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD 2019.
 4. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Engineer.
 - a. Subcontractors, and other parties granted access by Contractor to Engineer's digital data files shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Engineer.
- C. PDF Document Preparation: Where PDFs are required to be submitted to Engineer, prepare 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.

3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.8 PROJECT MEETINGS

- A. General: 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 Engineer of scheduled meeting dates and times a minimum of 10 working days prior to meeting.
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 and Engineer, within three days of the meeting.

- B. Preconstruction Conference: Engineer will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Sustainable design requirements.
 - o. Preparation of Record Documents.
 - p. Use of the premises.
 - q. Work restrictions.
 - r. Working hours.
 - s. Owner's occupancy requirements.
 - t. Responsibility for temporary facilities and controls.
 - u. Procedures for moisture and mold control.
 - v. Procedures for disruptions and shutdowns.
 - w. Construction waste management and recycling.
 - x. Parking availability.

- y. Office, work, and storage areas.
 - z. Equipment deliveries and priorities.
 - aa. First aid.
 - bb. Security.
 - cc. Progress cleaning.
 - dd. List of major subcontractors and suppliers.
3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Progress Meetings: Engineer will conduct progress meetings at monthly intervals.
- 1. Coordinate dates of meetings with preparation of payment requests.
 - 2. Attendees: In addition to representatives of Owner and Engineer, each contractor, subcontractor, supplier, 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) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Status of sustainable design documentation.
 - 6) Deliveries.
 - 7) Off-site fabrication.
 - 8) Access.
 - 9) Site use.
 - 10) Temporary facilities and controls.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Status of RFIs.
 - 16) Status of Proposal Requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.

- 19) Pending claims and disputes.
 - 20) 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

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SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

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 documenting the progress of construction during performance of the Work, including the following:
1. Startup construction schedule.
 2. Contractor's Construction Schedule.
 3. Construction schedule updating reports.
 4. Daily construction reports.
 5. Material location reports.
 6. Site condition reports.
 7. Unusual event reports.
- B. Related Requirements:
1. Section 014000 "Quality Requirements" for schedule of tests and inspections.
 2. Section 012900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 2. Predecessor Activity: An activity that precedes another activity in the network.
 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Working electronic copy of schedule file.
 - 2. PDF file.
- B. Startup construction schedule:
 - 1. Submittal of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.
- E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, latest allowable start date, latest allowable finish date, status (where critical) and total float and free float in calendar days.
 - 1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.

3. Total Float Report: List of activities sorted in ascending order of total float.
 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
- F. Construction Schedule Updating Reports: Submit with Applications for Payment.
- G. Daily Construction Reports: Submit at monthly intervals.
- H. Material Location Reports: Submit at monthly intervals.
- I. Site Condition Reports: Submit at time of discovery of differing conditions.
- J. Unusual Event Reports: Submit at time of unusual event.
- K. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Engineer's request.

1.6 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
1. Secure time commitments for performing critical elements of the Work from entities involved.
 2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Program Description:
1. A Critical Path Method (CPM) construction schedule shall be used to control the Work and to provide a basis for determining job progress. The construction schedule shall be prepared and maintained by the Contractor. All work shall be done in accordance with the established CPM schedule. The Contractor and all subcontractors shall cooperate fully in developing the construction schedule and in executing the work in accordance with the CPM schedule.
 2. The construction schedule shall consist of a computerized CPM network (diagram of activities) presented in a time-scaled graphic (print-out) with reports, as specified herein.
- B. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1. Use Microsoft Project, Primavera, or Meridian Prolog, for current Windows operating system.
- C. Qualifications:
1. The Contractor shall have the capability of preparing and utilizing the specified CPM schedule, or engage the services of a specialized scheduling professional to do so. Within seven days of the award of contract, provide a résumé or qualifications statement for the individual within the Contractor's organization, or the outside consultant, who is being proposed as the responsible party for development and maintenance of the CPM schedule. The résumé or qualifications statement shall demonstrate that the proposed responsible party has successfully developed and maintained CPM schedules for at least three construction projects of the same size or greater than this project. The proposed responsible party for the CPM schedule is subject to approval by the Engineer and Owner. If the proposed responsible party for the CPM schedule is not approved by the Engineer and/or Owner, Contractor shall resubmit a more-appropriate candidate for approval.
- D. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- E. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than twenty days, unless specifically allowed by Engineer.
 2. Activities to facilitate the Work: Indicate start and completion dates for the following as applicable:
 - a. Securing of approvals and permits required for performance of the Work.
 - b. Temporary facilities.
 - c. Owner interfaces and furnishing of items.
 - d. Interfaces with Separate Contracts.
 - e. Regulatory agency approvals.
 - f. Punch list.
 3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
 4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 5. Commissioning Time: Include no fewer than 15 days for commissioning.
 6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.
 7. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.

- F. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use-of-premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Sample testing.
 - e. Deliveries.
 - f. Installation.
 - g. Tests and inspections.
 - h. Adjusting.
 - i. Startup and placement into final use and operation.
 - j. Commissioning.
 8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Substantial Completion.
- G. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- H. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.

- I. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
 2. Unanswered Requests for Information.
 3. Rejected or unreturned submittals.
 4. Notations on returned submittals.
 5. Pending modifications affecting the Work and the Contract Time.
- J. Acceptability:
1. Submit the CPM schedule submittals, as specified, and resubmit as needed, until they are in compliance with Contract requirements.
 2. The Engineer's review of the Contractor's construction schedule submittals will only be for conformance with the Contract requirements – including but not limited to contract time and work sequences specified in the contract documents. The Engineer's review of the schedule shall not include the Contractor's means and methods of construction or safety. The Engineer's concurrence, acceptance, or approval of the Contractor's schedule submittals will not relieve the Contractor from responsibility for complying with the Contract Scope, Contract Time, or any other contract requirement. Any indication of concurrence, acceptance, or approval of the Contractor's schedule will only indicate a general conformance with the Contract Requirements.
 3. Engineer's review of the Contractor's construction schedule submittals shall not relieve the Contractor from responsibility for any deviations from the Contract Documents unless the Contractor has in writing called Engineer's attention to such deviations at the time of submission and Engineer has given written concurrence to the specific deviations, nor shall any concurrence by the Engineer relieve Contractor from responsibility for errors and omissions in the submittals. Concurrence of the CPM Activity Network by the Engineer is advisory only and shall not relieve the Contractor of responsibility for accomplishing the Work within the Contract completion date(s).
 4. Concurrence, acceptance, or approval of the Contractor's CPM schedule by the Engineer in no way makes the Engineer an insurer of the CPM schedule's success, nor liable for time or cost overruns resulting therefrom.
 5. Failure to include any element of work required for the performance of this Contract will not excuse the Contractor from completing all Work required within the Contract completion date(s), notwithstanding the review of the network by the Engineer.
 6. CPM schedules that contain activities with negative float, or which extend beyond the contract completion date, will not be acceptable.
 7. Except where earlier completions are specified, CPM schedules which show completion of all work prior to the contract completion date may be indicated; however, in no event shall they constitute a basis for claim for delay by the Contractor.
- K. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate Final Completion percentage for each activity. Activities shall not be considered to be complete until they are in fact 100 percent complete.
 4. Submit a narrative report based on the CPM schedule evaluation, in a format agreed upon by the Contractor and the Engineer. The report shall include a description of the progress during the previous period in terms of completed activities, an explanation of each activity which is showing a delay, a description of problem areas, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates and an explanation of corrective action taken or proposed.
- L. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.
- M. The contract completion time will be adjusted only for causes specified in this Contract. In the event the Contractor requests an extension of any contract completion date, the Contractor shall furnish such justification and supporting evidence as the Engineer may deem necessary to determine whether the Contractor is entitled to an extension of time under the provisions of this Contract. The Engineer will, after receipt of such justification and supporting evidence, make findings of fact and will advise the Contractor in writing thereof. If the Engineer finds that the Contractor is entitled to any extension of any contract completion date, the Engineer's determination as to the total number of days extension shall be based upon the currently approved CPM schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule. Actual delays in activities which, according to the CPM schedule, do not affect any contract completion date shown by the critical path in the network will not be the basis for a change therein.
- N. Distribution: Distribute copies of approved schedule to Engineer Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 CPM SCHEDULE REQUIREMENTS

- A. Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 30 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 30 days after date established for the Notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.
 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing and inspection.
 - j. Commissioning.
 - k. Punch list and Final Completion.
 - l. Activities occurring following Final Completion.
 - m. Maintenance of existing facilities.
 - n. Contract milestones.
 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
 5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Engineer's approval

- prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.
- a. Each activity cost shall reflect an appropriate value subject to approval by Engineer.
 - b. Total cost assigned to activities shall equal the total Contract Sum.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.
- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the schedule of values).
- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.
- H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
 2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
 3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
 4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.

- a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
- b. Submit value summary printouts one week before each regularly scheduled progress meeting.

1.9 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Testing and inspection.
 8. Accidents.
 9. Meetings and significant decisions.
 10. Unusual events.
 11. Stoppages, delays, shortages, and losses.
 12. Meter readings and similar recordings.
 13. Emergency procedures.
 14. Orders and requests of authorities having jurisdiction.
 15. Change Orders received and implemented.
 16. Work Change Directives received and implemented.
 17. Services connected and disconnected.
 18. Equipment or system tests and startups.
 19. Partial completions and occupancies.
 20. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
1. Material stored prior to previous report and remaining in storage.
 2. Material stored prior to previous report and since removed from storage and installed.
 3. Material stored following previous report and remaining in storage.
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or

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effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013200

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SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

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 the following:
 - 1. Periodic construction photographs.
 - 2. Final Completion construction photographs.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Submit photos on CD-ROM or thumb-drive or by e-mail. Include copy of key plan indicating each photograph's location and direction.
 - 2. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of location, vantage point, and direction.
 - g. Unique sequential identifier keyed to accompanying key plan.

1.4 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.5 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.
- B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- C. Metadata: Record accurate date and time from camera.
- D. File Names: Name media files with date and sequential numbering suffix.
- E. Usage Rights: Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

1.6 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs with maximum depth of field and in focus.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Preconstruction Photographs: Before commencement of the Work take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Engineer.
 - 1. Flag excavation areas construction limits before taking construction photographs.
 - 2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- D. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
 - 1. Underground utilities.
 - 2. Piping.
- E. Periodic Construction Photographs: Take 20 photographs monthly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

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- F. Final Completion Construction Photographs: Take 50 photographs after date of Substantial Completion for submission as Project Record Documents. Engineer will inform photographer of desired vantage points.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013233

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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:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 013233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
5. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
6. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
7. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. 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 Engineer'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 Engineer'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. Mass Submittals: Six or more submittals or items in one day or 15 or more submittals or items in one week.

1.4 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list 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 Engineer 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 Schedule: 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 Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule as required 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 Engineer's final release or approval.
 - g. Scheduled dates for purchasing.
 - h. Scheduled date of fabrication.
 - i. Scheduled dates for installation.
 - j. Activity or event number.

1.5 SUBMITTAL FORMATS

- A. Numbering System: Utilize the following example submittal identification numbering system to identify submittals and as file names for PDF submissions:
 - 1. First Identifier - Alphabet Character: D, S, M or I which represents Shop Drawing (including working drawings and product data), Sample, Manual (Operating & Maintenance) or Informational, respectively.
 - 2. Second Identifier - Next 6 or 8 Digits: Applicable Specification Section Number. Do not mix submittals from different specification sections into a single submittal.
 - 3. Third Identifier - Next Three Digits: Sequential number of each separate item or drawing submitted under each Specification Section, in chronological order submitted, starting at 001.

4. Fourth Identifier - Last Alphabet Character: A to Z, indicating the submission (or resubmission) of the same submittal, i.e., "A" = 1st submission, "B" = 2nd submission, "C" = 3rd submission, etc.
5. EXAMPLE: D-033000.13-008-B.
 - a. D = Shop Drawing.
 - b. 03 30 00.13 = Section; use only 6 digits for sections that do not include 8 digits.
 - c. 008 = the eighth different submittal under this Section.
 - d. B = the second submission (first resubmission) of that particular shop drawing.

B. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Engineer.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
9. Category and type of submittal.
10. Submittal purpose and description.
11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
12. Drawing number and detail references, as appropriate.
13. Indication of full or partial submittal.
14. Location(s) where product is to be installed, as appropriate.
15. Other necessary identification.
16. Remarks.
17. Signature of transmitter.

C. Options: Identify options requiring selection by Engineer.

D. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

E. Submittals:

1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
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 Engineer.
3. Action Submittals: Submit one electronic copy of each submittal unless otherwise indicated. Engineer will return one electronic copy.
4. Informational Submittals: Submit one electronic copy of each submittal unless otherwise indicated. Engineer will not return copies.

5. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 6. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using Contractor's transmittal form.
- F. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.6 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Email: Prepare submittals as PDF package and transmit to Engineer by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Engineer.
 - a. Engineer will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
- 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 submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer 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 resubmittals, as follows. Time for review shall commence on Engineer'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 resubmittals.
1. Initial Review: Allow 30 days for initial review of each submittal (and 45 days for multi-discipline reviews). Allow additional time if coordination with subsequent submittals is required. Engineer 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. Resubmittal Review: Allow 15 days for review of each resubmittal.

4. Sequential Review: Where sequential review of submittals by Engineer's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
- D. Resubmittals: Make resubmittals 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 Engineer's action stamp.
 4. Repetitive Reviews: Shop drawings, O&M manuals, and other submittals will be reviewed no more than twice at the Owner's expense. All subsequent reviews will be performed at the Contractor's expense. Reimburse the Owner for all costs invoiced by Engineer for the third and subsequent reviews.
- E. 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.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's action stamp.

1.7 SUBMITTAL REQUIREMENTS

- A. 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 unsuitable 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 that show 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 Shop Drawings, and before or concurrently with Samples.

- B. 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. Paper 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.
 - a. Electronic PDF.
- C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
 - a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.
 - d. Sample source.
 - e. Number and title of applicable Specification Section.
 - f. Specification paragraph number and generic name of each item.
 3. Email Transmittal: Provide PDF transmittal. Include 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.
- D. 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.
- E. 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 architects and owners, and other information specified.
- F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- G. Certificates:
1. Certificates and Certifications Submittals: Submit 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. Provide a notarized signature where indicated.
 2. Insert definition of Contractor certificates here if required by individual Specification Sections. See the Evaluations.
 3. Contractor's Certification: Each shop drawing, working drawing, product data, and sample shall have affixed to it the following Certification Statement:
 - a. "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements."
 4. 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.
 5. 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.
 6. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
 7. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 8. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.
- H. Test and Research Reports:
1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests

- performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
 3. 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.
 4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.

1.8 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Engineer.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and one paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.9 PROPOSED PRODUCT LIST

- A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.10 CONTRACTOR'S REVIEW

- A. Action Submittals 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 Engineer.
- B. Contractor Responsible for:
 - 1. Determination and verification of materials including manufacturer's catalog numbers.
 - 2. Determination and verification of field measurements and field construction criteria.
 - 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 - 4. Determination of accuracy and completeness of dimensions and quantities.
 - 5. Confirmation and coordination of dimensions and field conditions at Site.
 - 6. Construction means, techniques, sequences, and procedures.
 - 7. Safety precautions.
 - 8. Coordination and performance of Work of all trades.
 - 9. Other requirements enumerated in Contract Documents.
- C. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include 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.
 - 1. Engineer will not review submittals received from Contractor that do not have Contractor's review and approval.

1.11 ENGINEER'S REVIEW

- A. Do not make mass submittals to Engineer. If mass submittals are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review mass submittals based on priority determined by Engineer after consultation with Owner and Contractor.
- B. Action Submittals: Engineer will review each submittal, indicate corrections or revisions required, and return.
 - 1. PDF Submittals: Engineer will indicate, via markup on each submittal, the appropriate action.

2. Paper Submittals: Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- C. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
 - D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Engineer.
 - E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
 - F. Engineer will return without review submittals received from sources other than Contractor.
 - G. Submittals not required by the Contract Documents will be returned by Engineer without action.
 - H. Shop drawings will be returned to the Contractor with one of the following codes.
 1. "APPROVED" - This code is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.
 2. "APPROVED AS NOTED" - This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
 3. "APPROVED AS NOTED/RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. The resubmittal is to address all comments, omissions and non-conforming items that were noted. An additional box is checked to indicate whether the resubmission is for the complete package, or for parts of the package. If no box is checked, a complete resubmittal shall be provided. Review code may designate if a partial or full submittal is required. If full submittal is required, a complete resubmittal package addressing all comments shall be provided. If a partial submittal is designated, resubmittal shall only include information pertaining to those items noted in review comments requiring clarification and any portions of submittal impacted as a result of the response. Resubmittal is to be received by the Engineer within 30 calendar days of the date of the Engineer's transmittal requiring the resubmittal.
 4. "REJECTED" - This code is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the Contract Documents.
 5. "RECEIPT ACKNOWLEDGED (Not subject to Engineer's Approval)" - This code is assigned to acknowledge receipt of a submittal that is not subject to the Engineer's approval. This code is generally used with submittals involving the Contractor's means and methods of construction work plans, and health and safety plans.

1.12 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

- A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.
- B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
 - 1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
 - 2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
 - 3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
 - 4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
 - 5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
 - 6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer/Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013300

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6706-250111
November 2020

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SECTION 013526 - GOVERNMENTAL SAFETY REQUIREMENTS

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. Preparing and implementing a Health and Safety (H&S) Plan to establish in detail the protocols necessary for protecting workers from potential hazards during the work specified in the Contract Documents.

1.3 DEFINITIONS

- A. SSHO is the site safety & health officer. The Contractor shall provide a responsible individual, competent through experience and training, to be able to identify hazards associated with the Contractor's Work and has overall responsibility for the safety and health performance of contractor's activities, including lower tier subcontractors. The person shall be present on-site during all contractor activities and shall ensure that the requirements of the Project Specific Safety and Health Plan are fully implemented. This person shall also:
 - 1. Attend pre-work conferences and site safety and health orientations and briefings. The Contractor is expected to supplement the site orientation with information related to the Contractor's scope of work.
 - 2. Document weekly toolbox safety meetings for the Contractor's employee's onsite.
 - 3. Submit weekly safety and health inspection reports of the construction site as it relates to the Contractor's scope of work. Record hazards identified, and corrective actions taken. The weekly inspection report shall be provided to the Site Manager.
 - 4. Report all job-related accidents/illness related to the Contractor's employees and lower tier subcontractors as soon as practical to the Site Manager and perform site accident and incident investigations associated with the Contractor's scope of work and fully cooperate with any other accident or incident investigations which may be required.
 - 5. Maintain safety and health statistical information and provide monthly reports to the Site Manager. Reports shall include, employee hours worked, the number of first aid cases, the number of medical treatment cases, the number of restricted and lost workday cases as defined by the US Occupational Health and Safety Administration. These reports shall include statistical information related to all of the Contractor's activities and the activities of lower tier subcontractors.
 - 6. Provide Site Manager with the immediate notification of any regulatory inspection and a copy of all resulting citations or notice of deficiencies.

1.4 ACTION SUBMITTALS

- A. Qualifications of the SSHO.
- B. Prior to commencing work at the jobsite, Contractors must file with the Site Manager all required documents, such as: A copy of the ***Contractor's Project Specific Safety and Health Plan*** and copies of employee training certificates, insurance certificates, construction permits, and operator licenses, Any approved "OSHA Variances," or other approvals as required to safely and legally perform the Contractor's Scope of Work. The ***Contractor's Project Specific Safety and Health Plan*** shall as a minimum include the following:
1. Letter of corporate commitment to Safety and Health signed by CEO or President of the contractor's organization.
 2. Brief description of the contractor's scope of work.
 3. Project safety and health organization, responsibilities, and accountability procedures.
 4. Project safety and health goals and objectives.
 5. Project hazard communication and safety training. (This section shall include a minimum requirement for a site hazard communication program and weekly safety meetings.)
 6. Activity hazard analyses covering activities within the contractor's scope of work describing the steps of each principle activity, the hazards associated with each activity and procedures to be used to eliminate or control the hazards.
 7. Personal protective equipment. (Note: Minimum site PPE requirements shall include hard hats, safety glasses with side shields and sturdy work boots.)
 8. Specialized medical surveillance and/or air monitoring procedures, if required.
 9. Safe work procedures. These may be incorporated by reference to the Contractor's Corporate Safety and Health Program.
 10. Safety inspections and audits.
 11. Project emergency response and preparedness procedures including provisions for providing first aid and notification of emergency services.
 12. The Contractor (and any of its subcontractors), must submit, a Hazardous Waste Management Plan that addresses the handling, labeling, transpiration, and disposal of hazardous waste. The Contractor shall be held solely responsible for compliance with the provisions of all applicable regulations associated with hazardous waste generated as a consequence of the Contractor's activities.

1.5 INFORMATIONAL SUBMITTALS

- A. Listed below are general conditions related to Safety and Health which the Contractor is required to comply with.
1. Should a specific interpretation be required concerning special and/or unusual safety, fire protection, or environmental concerns not covered by, the National Fire Protection Association Codes, and current OSHA/EPA or other local regulations the contractor shall contact the Site Manager's Safety and Health Representative or Corporate Safety and Health Office for guidance.
 2. The practices, procedures, and requirements set forth in this Appendix shall apply equally to all Contractors, and it is mandatory that each Contractor inform and enforce the provisions of this Appendix in all contracts with its Subcontractors.

3. The Site Manager shall have the right to direct the removal from the jobsite any Contractor or Contractor personnel for violation of safety, health, fire protection, or environmental rules and regulations.
4. Fighting or horseplay is strictly prohibited and shall be considered grounds for removal from the project.
5. The illegal use, possession, purchase, sale or diversion of a drug or controlled substance is prohibited. The use or possession of alcoholic beverages at the jobsite is prohibited.
6. The Site Manager shall have the right to direct the removal from the jobsite any defective tools and equipment, the use of which may create a hazardous situation.
7. The Site Manager reserves the right to delete, modify, or supplement these procedures at any time without prior notice, but in such event, will notify all contractors affected by such change in procedures.
8. The Site Manager reserves the right to evaluate the Contractor's, and any of its subcontractor's, overall safety performance, compliance with these procedures, and any established supplements, at intervals the Site Manager deems appropriate.
9. Prior to starting work in any jobsite area, each Contractor must first obtain permission and instructions from the Site Manager, or designee

1.6 TRAINING

- A. Certify that all Contractor personnel assigned for the purpose of performing or supervising work in accordance with the provisions of the H&S plan have received appropriate safety training in accordance with 29 CFR 1926.65. Training shall consist of a minimum of 40 hours of health and safety training and 8 hours refresher training annually. In addition, Contractor's supervisory personnel shall have a minimum of 8 hours additional specialized training for managing hazardous waste operations.
- B. Additionally, the Contractor shall be responsible for, and shall guarantee that, only personnel successfully completing the required training are permitted to enter designated areas of the site where worker protection is required.

1.7 MEDICAL SURVEILLANCE

- A. Certify that the services of an occupational physician will be provided and utilized to provide the minimum medical examinations and surveillance specified herein for all workers performing or supervising work in accordance with the provisions of the H&S plan.
- B. The entire medical surveillance program shall meet the requirements of OSHA standard 29 CFR 1926.65(f) including the provision requiring the Contractor to obtain a physician's written medical opinion based on site specific information furnished by the Contractor.
- C. Maintain all medical surveillance records in accordance with 29 CFR 1926.65 and make these records available to the Engineer or other regulatory agencies as required.

1.8 DESCRIPTION OF REQUIREMENTS

- A. This Section describes the minimum health and safety requirements for this project. Develop a detailed H&S Plan using this Section as a basis and delineating additional details and

requirements as deemed necessary. The H&S plan shall establish in detail the protocols necessary for protecting workers from potential hazards encountered during demolition activities.

- B. The H&S Plan shall include but not necessarily be limited to, the following components as required by OSHA 29 CFR 1926.65(b)4 and 1926.65(l)(2):
1. Site Description and Evaluation.
 2. Names of key personnel and alternate responsible for site safety and health (responsibilities and chain of command).
 3. Safety and health hazard assessment and risk analysis for each site task and operator (Accident Prevention Plan).
 4. Education and Training.
 5. Personnel Protective Equipment.
 6. Medical Surveillance.
 7. Air Monitoring (Environmental).
 8. Standard Operating Procedures, Engineering Controls and Work Practices.
 9. Site Control Measures (Work Zones, Communications and Security).
 10. Personnel Hygiene and Decontamination.
 11. Equipment Decontamination.
 12. Logs, Reports and Record Keeping.
 13. Heat/Cold Stress Monitoring.
 14. Pre-emergency planning.
 15. Personnel roles, lines of authority, training, and communication.
 16. Emergency recognition and prevention.
 17. Safe distances and places of refuge.
 18. Site security and control.
 19. Evacuation routes and procedures.
 20. Decontamination.
 21. Emergency Medical treatment and first aid.
 22. Emergency alerting and response procedures.
 23. Critique of response and follow-up.
 24. Personnel Protection Equipment and emergency equipment.

1.9 REGULATORY REQUIREMENTS

- A. The Contractor is responsible for awareness, knowledge and full compliance with all applicable rules, regulations, laws and practices applicable to the Contractor's Scope of Work, including lower tier subcontractors, prescribed by the site owner, and any other government or agency governing the safety and health of employees, other site personnel, the general public and protection of the environment. Within the United States and its Territories these include, but are not limited to regulations promulgated by the following:
1. Occupational Safety and Health Administration (OSHA)
 2. Environmental Protection Agency (EPA)
 3. Department of Transportation (DOT)
- B. Additional rules required by the Site Manager include:

1. Each Contractor has the responsibility for instructing its employees in safe practices for the operation of tools and equipment and for the maintenance of safe conditions.
2. Contractors shall furnish for their employees' personal safety equipment such as, ANSI Z89.1 approved hard hats, ANSI Z87.1 approved eye protection with fixed side shields, ear protection, foot protection, NIOSH approved respiratory protection, fall protection and other equipment as required for safe performance of their particular work assignment. All personnel on the job site shall be required at a minimum to wear hard hats, safety glasses with side shields and proper and sturdy footwear.
3. Danger tags and locks shall be utilized to prevent personal injury and equipment damage in accordance with project electrical and mechanical tagging procedures.
4. Scaffolding and other structures utilized for elevated work platforms shall have the required decking, handrails, mid-rails, toe boards, proper access, and nets or screens.
5. Catwalks shall conform to a two-plank width minimum and, if elevated, shall have handrails and toe boards.
6. Areas in which "overhead" work is to be performed shall be blocked, decked, barricaded, netted, posted, or evacuated as instructed by project supervision.
7. Pits, trenches, and other excavations shall be shored/shielded or sloped to the proper angle of repose, barricaded, and provided with proper access.
8. When not in use, blades of bulldozers and buckets of front-end loaders shall be lowered to the ground. Also, beds of dump trucks shall be lowered when traveling or not in use. Project parking and traffic regulations shall be complied with.
9. Crane booms shall be lowered at the end of single shifts or secured against movement by attaching the hoist line to a fixed structure.
10. Specific air sampling shall be performed to determine the presence of toxic materials or dusts, flammable atmosphere, and adequate oxygen content, in accordance with project procedures. Respirators, safety harnesses, lifelines, standby personnel, and permits shall be used when appropriate.
11. Personnel involved in activities which require the use of an Air Purifying Respirator (APR) shall not have facial hair which interferes with the respirator's face seal.
12. The Contractor shall provide to the Site Manager a copy of MSDSs for all hazardous materials prior to their use at the site.
13. Back-up alarms shall be provided on all construction vehicles and equipment and shall alarm continuously while the vehicle or equipment is in reverse motion. For equipment not equipped with a back-up alarm, a spotter shall be used.
14. All portable generators shall have frames externally grounded or other means to ensure there is no potential for circuit to frame conductivity.
15. All electrical services used in conjunction with field activities shall be equipped with Ground Fault Circuit Interrupters (GFCI).
16. Compliance with the following fire prevention measures is mandatory:
 - a. Smoking is permitted only in specific areas as designated in project rules and procedures.
 - b. Open fires are prohibited. Temporary gas-fired heaters shall not be used in enclosed areas. Only UL and NFPA approved petroleum and/or electrically fired heating devices will be authorized for use.
 - c. Hot work permits shall be required for all flame and spark producing work tasks.
 - d. Debris, scrap, and refuse shall be segregated and controlled in metal containers and removed at appropriate intervals. Any potential fire hazard shall be controlled.
 - e. Each Contractor is responsible for maintaining and cleaning their work area. All walkways shall be kept clean and free of obstructions. Broken/spilled, scrap or other

- waste materials shall be placed in appropriate containers or waste areas as soon as practical after they are generated.
- f. Flammable liquids shall be kept in UL approved safety containers and properly labeled as to contents.
 - g. Flammable and combustible materials shall be stored in designated locations that meet Federal, State, and local regulations.
 - h. All equipment such as cranes, trucks, bulldozers, graders, loaders, and backhoes shall be equipped with proper fire extinguishers.
 - i. The use of heavy equipment with internal combustion engines is prohibited within enclosed areas.
17. Only the number of persons provided with proper seats shall ride in a vehicle. No one shall ride on running boards, stand on moving equipment or ride on a vehicle other than in a proper seated position.
18. The swing radius of all heavy equipment such as cranes, back hoes, etc. shall be clearly barricaded.
19. The contractor shall provide 100 percent fall protection for fall exposures greater than 6-ft. in accordance with project procedures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013526

SECTION 014000 - QUALITY REQUIREMENTS

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 quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
 - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- A. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance

with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

- B. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- C. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" shall have the same meaning as the term "testing agency."
- E. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- F. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Engineer.

1.4 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.
- B. Delegated-Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.5 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Engineer regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Engineer for clarification before proceeding.

- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- E. Reports: Prepare and submit certified written reports and documents as specified.
- F. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
 2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
 3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include Work Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 1. Date of issue.
 2. Project title and number.
 3. Name, address, telephone number, and email address of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.

- B. **Manufacturer's Technical Representative's Field Reports:** Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement of whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. **Factory-Authorized Service Representative's Reports:** Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement of whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.

1.9 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. **Fabricator Qualifications:** A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. **Installer Qualifications:** A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. **Professional Engineer Qualifications:** A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed

for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged in the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods. Contractor responsibilities include the following:
 - 1. Provide test specimens representative of proposed products and construction.
 - 2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - 3. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Engineer, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

1.10 QUALITY CONTROL

- A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
 - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 2. Engage a qualified testing agency to perform quality-control services.

- a. Contactor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- C. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform duties of Contractor.
- D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- E. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- F. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.

4. Facilities for storage and field curing of test samples.
 5. Retain first subparagraph below if required or if common practice in Project vicinity.
 6. Delivery of samples to testing agencies.
 7. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 8. Security and protection for samples and for testing and inspection equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payments.
1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
 2. Distribution: Distribute schedule to Owner, Engineer, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Engineer.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer's reference during normal working hours.
1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

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6706-250111
November 2020

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SECTION 014200 - REFERENCES

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 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.
 - 1. AABC - Associated Air Balance Council; www.aabc.com.
 - 2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
 - 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
 - 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
 - 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
 - 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
 - 7. ABMA - American Boiler Manufacturers Association; www.abma.com.
 - 8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org
 - 9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
 - 10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
 - 11. AF&PA - American Forest & Paper Association; www.afandpa.org.
 - 12. AGA - American Gas Association; www.aga.org.
 - 13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
 - 14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 - 15. AI - Asphalt Institute; www.asphaltinstitute.org.
 - 16. AIA - American Institute of Architects (The); www.aia.org.
 - 17. AISC - American Institute of Steel Construction; www.aisc.org.
 - 18. AISI - American Iron and Steel Institute; www.steel.org.
 - 19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
 - 20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
 - 21. ANSI - American National Standards Institute; www.ansi.org.
 - 22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
 - 23. APA - APA - The Engineered Wood Association; www.apawood.org.
 - 24. APA - Architectural Precast Association; www.archprecast.org.
 - 25. API - American Petroleum Institute; www.api.org.
 - 26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
 - 27. ARI - American Refrigeration Institute; (See AHRI).

28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWPA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CE - Conformance Europeenne; <http://ec.europa.eu/growth/single-market/ce-marking/>
51. CEA - Canadian Electricity Association; www.electricity.ca.
52. CEA - Consumer Electronics Association; www.ce.org.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.pbmdf.com.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csagroup.com.
65. CSA - CSA International; www.csa-international.org.
66. CSI - Construction Specifications Institute (The); www.csinet.org.
67. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
69. CWC - Composite Wood Council; (See CPA).
70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHI - Door and Hardware Institute; www.dhi.org.
72. ECA - Electronic Components Association; (See ECIA).

73. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
74. ECIA - Electronic Components Industry Association; www.eciaonline.org.
75. EIA - Electronic Industries Alliance; (See TIA).
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
79. ESTA - Entertainment Services and Technology Association; (See PLASA).
80. ETL - Intertek (See Intertek); www.intertek.com.
81. EVO - Efficiency Valuation Organization; www.evo-world.org.
82. FCI - Fluid Controls Institute; www.fluidcontrolsintstitute.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmglobal.com.
86. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
87. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarroof.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GANA - Glass Association of North America; www.glasswebsite.com.
92. GS - Green Seal; www.greenseal.org.
93. HI - Hydraulic Institute; www.pumps.org.
94. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
95. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
96. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
97. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
98. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
99. IAS - International Accreditation Service; www.iasonline.org.
100. ICBO - International Conference of Building Officials; (See ICC).
101. ICC - International Code Council; www.iccsafe.org.
102. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
103. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
104. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
105. IEC - International Electrotechnical Commission; www.iec.ch.
106. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
107. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
108. IESNA - Illuminating Engineering Society of North America; (See IES).
109. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
110. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
111. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
112. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
113. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
114. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
115. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).

116. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
117. ISO - International Organization for Standardization; www.iso.org.
118. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
119. ITU - International Telecommunication Union; www.itu.int/home.
120. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
121. LMA - Laminating Materials Association; (See CPA).
122. LPI - Lightning Protection Institute; www.lightning.org.
123. MBMA - Metal Building Manufacturers Association; www.mbma.com.
124. MCA - Metal Construction Association; www.metalconstruction.org.
125. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
126. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
127. MHIA - Material Handling Industry of America; www.mhia.org.
128. MIA - Marble Institute of America; www.marble-institute.com.
129. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
130. MPI - Master Painters Institute; www.paintinfo.com.
131. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
132. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
133. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
134. NADCA - National Air Duct Cleaners Association; www.nadca.com.
135. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
136. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
137. NBI - New Buildings Institute; www.newbuildings.org.
138. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
139. NCMA - National Concrete Masonry Association; www.ncma.org.
140. NEBB - National Environmental Balancing Bureau; www.nebb.org.
141. NECA - National Electrical Contractors Association; www.necanet.org.
142. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
143. NEMA - National Electrical Manufacturers Association; www.nema.org.
144. NETA - InterNational Electrical Testing Association; www.netaworld.org.
145. NFHS - National Federation of State High School Associations; www.nfhs.org.
146. NFPA - National Fire Protection Association; www.nfpa.org.
147. NFPA - NFPA International; (See NFPA).
148. NFRC - National Fenestration Rating Council; www.nfrc.org.
149. NHLA - National Hardwood Lumber Association; www.nhla.com.
150. NLGA - National Lumber Grades Authority; www.nlga.org.
151. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
152. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
153. NRCA - National Roofing Contractors Association; www.nrca.net.
154. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
155. NSF - NSF International; www.nsf.org.
156. NSPE - National Society of Professional Engineers; www.nspe.org.
157. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
158. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
159. NWFA - National Wood Flooring Association; www.nwfa.org.
160. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
161. PDI - Plumbing & Drainage Institute; www.pdionline.org.

162. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
163. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
164. RFCI - Resilient Floor Covering Institute; www.rfci.com.
165. RIS - Redwood Inspection Service; www.redwoodinspection.com.
166. SAE - SAE International; www.sae.org.
167. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
168. SDI - Steel Deck Institute; www.sdi.org.
169. SDI - Steel Door Institute; www.steeldoor.org.
170. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
171. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
172. SIA - Security Industry Association; www.siaonline.org.
173. SJI - Steel Joist Institute; www.steeljoist.org.
174. SMA - Screen Manufacturers Association; www.smainfo.org.
175. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
176. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
177. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
178. SPIB - Southern Pine Inspection Bureau; www.spib.org.
179. SPRI - Single Ply Roofing Industry; www.spri.org.
180. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
181. SSINA - Specialty Steel Industry of North America; www.ssina.com.
182. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
183. STI - Steel Tank Institute; www.steeltank.com.
184. SWI - Steel Window Institute; www.steelwindows.com.
185. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
186. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
187. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
188. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
189. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
190. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
191. TMS - The Masonry Society; www.masonrysociety.org.
192. TPI - Truss Plate Institute; www.tpinst.org.
193. TPI - Turfgrass Producers International; www.turfgrasssod.org.
194. TRI - Tile Roofing Institute; www.tilerroofing.org.
195. UL - Underwriters Laboratories Inc.; <http://www.ul.com>.
196. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
197. USAV - USA Volleyball; www.usavolleyball.org.
198. USGBC - U.S. Green Building Council; www.usgbc.org.
199. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
200. WA - Wallcoverings Association; www.wallcoverings.org.
201. WASTEC - Waste Equipment Technology Association; www.wastec.org.
202. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
203. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
204. WDMA - Window & Door Manufacturers Association; www.wdma.com.
205. WI - Woodwork Institute; www.wicnet.org.
206. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.

207. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).

4. FED-STD - Federal Standard; (See FS).
 5. FS - Federal Specification; Available from DLA Document Services;
www.quicksearch.dla.mil.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
 6. MILSPEC - Military Specification and Standards; (See DOD).
 7. USAB - United States Access Board; www.access-board.gov.
 8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).
- F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
 2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
 3. CDHS; California Department of Health Services; (See CDPH).
 4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
 5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
 6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
 7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservation.tamu.edu.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 014200

SECTION 016000 - PRODUCT REQUIREMENTS

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 selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
 2. Section 012500 "Substitution Procedures" for requests for substitutions.
 3. Section 014200 "References" for applicable industry standards for products specified.
 4. Section 017700 "Closeout Procedures" for submitting warranties.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycle contract materials are considered new products, unless indicated otherwise.
 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.
- C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
- D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title, and Drawing numbers and titles.
 2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.
- E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."
- F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 1. Resolution of Compatibility Disputes between Multiple Contractors:
 - a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

1.5 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.
- C. Storage:
 1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
 2. Store products to allow for inspection and measurement of quantity or counting of units.
 3. Store materials in a manner that will not endanger Project structure.
 4. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection for wind.
 5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 7. Protect stored products from damage and liquids from freezing.

8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Engineer will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - a. Submit additional documentation required by Engineer in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Engineer, whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."
2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."
3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product that complies with requirements.
 - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of an unnamed product is not considered a substitution if the product complies with requirements.
5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer that complies with requirements.
 - a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of products of an unnamed manufacturer is not considered a substitution if the product complies with requirements.
7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
 - a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance the following requirements:
 1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects, with project names and addresses and names and addresses of Engineers and owners, if requested.
 5. Samples, if requested.
- B. Engineer's Action on Comparable Products Submittal: If necessary, Engineer will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."
 1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
 2. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.

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6706-250111
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- C. Submittal Requirements, Two-Step Process: Approval by the Engineer of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.
- D. Submittal Requirements, Single-Step Process: When acceptable to Engineer, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by the Engineer of Contractor' request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

PART 3 - EXECUTION (NOT USED)

END OF SECTION 016000

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SECTION 017300 - EXECUTION

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 administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.

- B. Related Requirements:

1. Section 011000 "Summary" for coordination , and limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor.
- B. Certified Surveys: Submit two copies signed by land surveyor, electronic signed PDF, and AutoCAD 2019 files in Civil 3D format.
- C. Certificates: Submit certificate signed by land surveyor, certifying that location and elevation of improvements comply with requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Final Property Survey: Submit 4 copies showing the Work performed and record survey data.

1.6 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with requirements specified in other Sections.
 - 1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Engineer for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- C. 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.
 - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
1. Description of the Work, including Specification Section number and paragraphs, and Drawing sheet number and detail, where applicable.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer in accordance to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Engineer promptly.
- B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish limits on use of Project site.
 - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 4. Inform installers of lines and levels to which they must comply.
 - 5. Check the location, level and plumb, of every major element as the Work progresses.
 - 6. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
 - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of , major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final As-Built Survey: Engage a land surveyor to prepare a final as-built survey showing significant features for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Show boundary lines, site improvements and utilities, existing improvements, and significant vegetation.
 - 2. Survey at same scale as the ENGINEER's line drawings (i.e., landfill gas piping, sideslope collectors, well locations, etc.) indicating lines, grades, and elevations at 50 ft increments. Provide elevations and coordinates of top of landfill gas well, top of pipe, header tie-in locations, fittings, valves, etc.

3.5 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by Engineer. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items onsite and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.6 COORDINATION OF OWNER'S PORTION OF THE WORK

- A. Site Access: Provide access to Project site for Owner's construction personnel and Owner's separate contractors.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel and Owner's separate contractors.
 1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
 2. Preinstallation Conferences: Include Owner's construction personnel and Owner's separate contractors at preinstallation conferences, covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
 1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials

specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Coordinate with Owner on waste disposal in the Class I Landfill.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.9 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

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6706-250111
November 2020

- D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

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.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
 - 2. Section 013233 "Photographic Documentation" for submitting Final Completion construction photographic documentation.
 - 3. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
 - 4. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.3 DEFINITIONS

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Engineer's use prior to Engineer's inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

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

1.5 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest-control inspection.

1.6 MAINTENANCE MATERIAL SUBMITTALS

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

1.7 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, 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.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Engineer's and Owner's signature for receipt of submittals.
 - 5. Submit testing, adjusting, and balancing records.
 - 6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- 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. Complete startup and testing of systems and equipment.

2. Perform preventive maintenance on equipment used prior to Substantial Completion.
 3. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 4. Complete final cleaning requirements.
 5. Touch up paint 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, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer 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 Engineer, that must be completed or corrected before certificate will be issued.
1. Request reinspection 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.

1.8 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 in accordance with Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit Final Completion photographic documentation.
- 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, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer 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. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.9 LIST OF INCOMPLETE ITEMS

- 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. Include the following information at the top of each page:

- a. Project name.
 - b. Date.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Page number.
2. Submit list of incomplete items in the following format:
- a. MS Excel Electronic File. Engineer will return annotated file.
 - b. PDF Electronic File. Engineer will return annotated file.

1.10 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, 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.
- D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 1. Submit by email to Engineer.
- E. Warranties in Paper Form:
 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.
- F. 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.
 - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

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 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 not planted, mulched, or paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove labels that are not permanent.
 - f. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - g. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

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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. Systems and equipment operation manuals.
 - 2. Systems and equipment maintenance manuals.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and 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. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Engineer will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:
 - 1. Submit by email to Engineer. Enable reviewer comments on draft submittals.
 - 2. Submit three paper copies. Engineer will return two copies.

- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Engineer 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 commencing demonstration and training. Engineer will return copy with comments.
 - 1. Correct or revise each manual to comply with Engineer's comments. Submit copies of each corrected manual within 15 days of receipt of Engineer's comments and prior to commencing demonstration and training.
- E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. 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. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
 - 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
 - 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.6 REQUIREMENTS FOR OPERATION AND MAINTENANCE MANUALS

- A. Organization of Manuals: 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 Engineer.
 7. 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.
 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- 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. 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.

1.7 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
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.
- B. 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. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- C. 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.
- D. 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.

- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.8 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
 - 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.
- B. 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 warranties and bonds as described below.
- C. 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.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins; 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.
 - a. 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.
 - 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.
- E. 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.
- F. 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.
- G. 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.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. 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.
- J. 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 maintenance manuals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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 Product Data.
 - 3. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for maintaining and exhibiting project record documents as a prerequisite for progress payments.
 - 2. Section 017300 "Execution" for final property survey.
 - 3. Section 017700 "Closeout Procedures" for general closeout procedures.
 - 4. 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 one set(s) of marked-up record prints.
 - 2. 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) Submit PDF electronic files of scanned record prints and one set(s) of file prints.
 - 3) Submit Record Digital Data Files and one set(s) of plots.
 - 4) Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit three paper-copy set(s) of marked-up record prints.

- 2) Submit PDF electronic files of scanned Record Prints and three set(s) of file prints.
 - 3) Print each drawing, whether or not changes and additional information were recorded.
- c. Final Submittal:
- 1) Submit one paper-copy set(s) of marked-up record prints.
 - 2) Submit Record Digital Data Files and three set(s) of Record Digital Data File plots.
 - 3) Plot each drawing file, whether or not changes and additional information were recorded.
- B. 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.
- C. 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.
- D. Reports: Submit written report monthly indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 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 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. Locations and depths of underground utilities.
 - d. Revisions to routing of piping and conduits.
 - e. Changes made by Change Order or Work Change Directive.

- f. Changes made following Engineer's written orders.
 - g. Details not on the original Contract Drawings.
 - h. Field records for variable and concealed conditions.
 - i. 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 prints 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. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Engineer. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as for the original Contract Drawings.
 2. Format: DWG DXF DGN, Version, Microsoft Windows Apple Macintosh operating system.
 3. Format: Annotated PDF electronic file with comment function enabled.
 4. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 5. Refer instances of uncertainty to Engineer through Construction Manager for resolution.
 6. Engineer will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Section 013100 "Project Management and Coordination" for requirements related to use of Engineer's digital data files.
 - b. Engineer will provide data file layer information. Record markups in separate layers.
- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file with comment function enabled.
 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 Engineer and Construction Manager.
 - e. Name of Contractor.

1.5 RECORD PRODUCT DATA

- 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. 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 and Record Drawings where applicable.
- C. Format: Submit Record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.
 - 1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.6 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintenance of Record Documents: Store Record Documents 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 Engineer's reference during normal working hours. As a prerequisite for monthly progress payments, exhibit the updated record documents for review by Owner and Engineer for accuracy and completeness.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 017839

SECTION 310529 - HIGH DENSITY POLYETHYLENE (HDPE) PIPE FOR LANDFILL GAS COLLECTION SYSTEMS

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 high density polyethylene landfill gas pipe, fittings, and appurtenances.
- B. Related Requirements:
 - 1. Section 312050 "Earthwork for Solid Waste."

1.3 ACTION SUBMITTALS

- A. Submit within 15 days following Effective Date of Agreement:
 - 1. Complete, detailed shop drawings of all polyethylene pipe, including location of all fittings, joints, and connections to structures.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.
- B. Material Certificates:
 - 1. Manufacturer quality control manual describing implementation of quality control procedures during pipe manufacturing process.
 - 2. Pipe manufacturer's certification of compliance with these Specifications.
 - 3. For each shipment of pipe, a manufacturer's certification that pipe was manufactured from same resin identified in Part 1 Article "Quality Assurance."
 - 4. Certification demonstrating that joining technician was trained by pipe manufacturer and is qualified to perform heat fusion welding.
 - 5. Manufacturer's recommendations for handling, storing, and installing pipe and fittings.
- C. Material Test Reports:
 - 1. List of materials furnished, names of suppliers and date of delivery of materials to site.
 - 2. The origin of resin to be used in manufacturing of pipe including suppliers name and production plant, as well as brand name and number.

3. Documentation from resin's manufacturer showing results of following tests for resin identification:
 - a. Melt Flow Index: ASTM D1238.
 - b. Density: ASTM D1505.
- D. Source quality-control reports.
- E. Field quality-control reports: Landfill gas air pressure test report.
- F. Sample Warranty: For manufacturer's warranty.

1.5 QUALITY ASSURANCE

- A. Resin Evaluation: Sample incoming resin for conformance testing against test results supplied by resin manufacturer. Take samples from top and bottom of each compartment from every hopper car received. Perform the following conformance tests on sampler:
 1. Melt Flow Index: ASTM D1238.
 2. Density: ASTM D1505.
 3. The results of these tests shall become part of manufacturer's permanent quality control records.
- B. Finished Product Evaluation: Each length of pipe produced shall be checked by production staff for items listed below. Results of all measurements shall be recorded on production sheets which become part of manufacturer's permanent records.
 1. Pipe in process shall be checked visually, inside and out for cosmetic defects (grooves, pits, hollows, etc.).
 2. Pipe outside diameter shall be measured using a suitable periphery tape to ensure conformance with ASTM F714.
 3. Pipe wall thickness shall be measured at twelve equally spaced locations around circumference at both ends of pipe to ensure conformance with ASTM F714.
 4. Pipe length shall be measured.
 5. Pipe marking shall be examined and checked for accuracy.
 6. Pipe ends shall be checked to ensure they are cut square and clean.
 7. Subject inside surface to a "reverse bend test" to ensure pipe is free of oxidation (brittleness).
- C. Stress Regression Testing: Polyethylene pipe manufacturer shall provide certification that stress regression testing has been performed on specific polyethylene resin being utilized in manufacture of this product. This stress regression testing shall have been done in accordance with ASTM D2837 and manufacturer shall provide a product supplying a minimum Hydrostatic Design Basis (HDB) of 1600 psi as determined in accordance with ASTM D2837.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store pipe on clean level ground, preferably turf or sand, free of sharp objects, to prevent undue scratching or gouging. Handle pipe in such a manner that pipe is not damaged by dragging it

over sharp and cutting objects. Maximum allowable depth of cuts, scratches or gouges on exterior of pipe is 10 percent of wall thickness. Keep interior pipe surface free of cuts, gouges or scratches.

1.7 WARRANTY

- A. Furnish Owner a written warranty from manufacturer. Manufacturer shall warrant that pipe shall be of merchantable quality (as defined by the Uniform Commercial Code) for a period of one year. Manufacturer shall guarantee that pipe furnished is suitable for purpose intended and free from defects of material and workmanship. In the event pipe fails to perform as specified, pipe manufacturer shall promptly replace defective pipe without any cost to Owner.
- B. Should a defect occur, which is covered under warranty, Warrantor shall bear all costs for repair and/or relocation and replacement.
- C. Warrant HDPE pipe against defects in installation and workmanship for period of 2 years commencing with date of Final Acceptance. Include services of qualified service technicians and all materials required for repairs at no expense to Owner.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. High-Density Polyethylene Pipe: Suitable for leachate, landfill gas, and condensate. Maximum temperature of liquids will be 120 degrees F.

2.2 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

- A. High Density Polyethylene (HDPE) Pipe Resins: High molecular weight, high density, PE 4710 polyethylene with a cell classification number of 445474C in accordance with ASTM D3350 and a minimum density of 0.955 in accordance with ASTM D1505.
- B. All high-density polyethylene pipe and fittings shall be made from same resin. If rework compounds are required, only those generated in manufacturer's own plant from resin compounds of same class and type from same raw material supplier shall be used.
- C. Pipes Sizing: Nominal dimensions as indicated on Drawings; meet requirements of IPS Standard Dimension Ratio (SDR) 11 and SDR 17 as indicated on Drawings; per ASTM F714.
- D. Joints: Butt, heat fusion joints. Manufacture joints in strict compliance with manufacturer's recommendations.
- E. Lengths: Furnished in standard laying lengths not exceeding 50-feet.
- F. Polyethylene Compound: Suitably protected against degradation by ultraviolet light as required by ASTM D1603.

2.3 PIPE IDENTIFICATION

- A. Continuously indent print on pipe or spaced at intervals not exceeding 5-feet per ASTM F714:
1. Name and/or trademark of pipe manufacturer.
 2. Nominal pipe size (outside diameter) in accordance with ASTM F714.
 3. Dimension ratio (DR) and pressure rating per ASTM F714.
 4. The letters PE followed by polyethylene grade in accordance with ASTM D3350, (e.g., PE 445474C). Where applicable, standard thermoplastic pipe materials designation code may be used as an alternative marking, e.g. PE 4710.
 5. Manufacturing standard reference, e.g., ASTM F714.
 6. A production code from which date and place of manufacture can be determined.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install High Density Polyethylene (HDPE) Pipe in accordance with instruction of manufacturer, as indicated on Drawings and as specified herein. Provide heat fusion joints by a factory qualified joining technician as designated by pipe manufacturer.
- B. Lay pipe to lines and grade indicated on Drawings with bedding and backfill as indicated on Drawings. Remove the tape covering perforations during installation.
- C. When laying is not in progress, including lunchtime, close open ends of pipe by fabricated plugs, or by other approved means. Provide all plugs as OD fitting type plugs. No plugs will be allowed that require insertion of plug into pipe, unless approved by Engineer.
- D. Remove sections of pipe with cuts, scratches or gouges deeper than allowed completely and ends of pipeline rejoined.
- E. Join pipe by method of thermal butt fusion, as outlined in ASTM F2620 or as recommended by manufacturer. Make all joints in strict compliance with manufacturer's recommendations. In tight locations in which butt fusion equipment cannot be set up, a thermal coupling such as Central Electrofusion Systems, or equal, may be used. Join pipe as outlined in ASTM F1055.
- F. Make mechanical connections of polyethylene pipe to auxiliary equipment such as valves, other pipe materials, pumps and tanks through flanged connections consisting of following:
1. Thermally butt-fuse a epoxy-coated steel back-up, polyethylene flange adapter to stub end of pipe.
 2. Use a epoxy-coated steel back up ring on both sides of connection as approved by Engineer.
 3. Use Type 304 stainless steel bolts and nuts coated with anti-seize compound.
- G. Provide flange connections with a full-face 1/8-inch red silicone gasket.

- H. Do not use threaded male or female adapters of any plastic material for adapting polyethylene pipe to systems, fitting or auxiliary equipment of other materials, or for joining installation lengths to each other.
- I. Ensure HDPE pipe is at temperature of surrounding soil at time of backfilling and compaction.
- J. Engineer shall observe and accept installation of pipe by prior to backfilling.

3.2 CLEANING

- A. As pipe laying progresses, and at conclusion of work, thoroughly clean all of new pipelines to remove all dirt, stones, pieces of wood or other material which may have entered during construction period. Remove debris cleaned from lines from job site. If, after this cleaning, any obstructions remain, remove.

3.3 LANDFILL GAS PIPE AIR PRESSURE TESTING

A. Preparation:

- 1. Commence test procedures when the following conditions have been met:
 - a. Pipe section to be tested is clean and free of dirt, sand or other foreign material.
 - b. Plug pipe outlets with test plugs. Brace each plug securely to prevent blowouts.
 - c. Add air slowly.
 - d. Include regulator set in pressurizing equipment to avoid over-pressurizing and damaging pipe.
- 2. Pressure test in accordance with OSEA requirements.
- 3. Provide necessary piping connections between section of line being tested and air supply, together with test pressure equipment, meters, pressure gauge, and other equipment, materials, and facilities necessary to make specified tests.
- 4. Furnish and install bulkheads, flanges, valves, bracing, blocking or other temporary sectionalizing devices that may be required.
- 5. Remove temporary sectionalizing device after tests have been completed.

B. Testing Equipment:

- 1. Provide equipment for this testing procedure.
 - a. Polyethylene flange adaptor with PVC blind flange.
 - b. Temperature gauge (0 to 100 deg. C) tapped and threaded into blind flange.
 - c. Pressure gauge (0 to 15 psi).
 - d. Tire valve to facilitate air pressure hose.
 - e. Ball valve to release pipe pressure at test completion.
 - f. Polyethylene reducers to be used to adapt test flange to size of pipe being tested.
 - g. Air compressor for adequate air supply for testing.
- 2. Provide verification and results of gauge calibration prior to (less than 60 days) and after test completion.

C. Pre-Installation Testing:

1. Provide Engineer and Owner 24-hours notification prior to test.
2. Pipe Test Segments:
 - a. Butt weld.
 - b. Less than 2,000-ft. in length.
 - c. Fitted with cap on one end and test apparatus on other end.
3. Environment:
 - a. Lay test segment on ground surface and allow to reach constant or ambient air temperature before test.
 - b. Perform test during period if possible, when pipe segment will be out of direct sunlight to minimize pressure changes as result of temperature fluctuations.
4. Test Procedure:
 - a. Apply test pressure of a minimum 10 psig to test segment.
 - b. Observe test pressure for 1-hr.
 - c. Do not allow pressure drop over 1-hr period to exceed 1 percent.
 - d. Correct pressure drop for temperature.
5. Test Failure Procedures:
 - a. Perform following when pipe segment fails pre-installation test:
 - 1) Check entire length of pipe and fusions for cracks, pinholes, perforations or other possible leakage points.
 - 2) Check blocked risers and capped and for leakage.
 - 3) Verify leaks by applying soap water solution and observe for bubble formation.
 - 4) Repair pipe and fused joint leaks by cutting out leaking area and re-bond suitable segments.
 - 5) After leaks are repaired, retest.

D. Final Test After Installation:

1. Pressure test in presence of Engineer.
2. Perform final test on installed pipeline.
 - a. Perform final test in accordance with procedures for pre-installation testing.
 - b. Temporarily cap drip legs and perforated segments with fused polyethylene cap.
 - c. Locate test apparatus at inlet for blower.
3. Correct and retest leaks or defects.

E. Test Reporting:

1. Report test in writing on form in Appendix A within 7 days of test completion.
2. Include following information if failure occurs:

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- a. Location of failure segment.
- b. Nature of leaks.
- c. Details of repairs performed.
- d. Retest results.

END OF SECTION 310529
(forms follow)

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APPENDIX A: LANDFILL GAS PRESSURE TEST REPORT FORM

PROJECT NAME/NO.: _____ DATE:

CONTRACTOR: _____ TIME:

PERSON PERFORMING TESTS:

DESCRIPTION/LOCATION OF TEST SEGMENT: (Pipe Diameter, Length and SDR's)

 T_i = Initial temperature in deg. C = _____ deg. C P_i = Initial test pressure in psig = _____ psig P_c = Initial pressure in psig corrected for temperature (T_t) at time 't'

t = Time in minutes from initiation of test

 T_t = Temperature in deg. C at time 't' P_t = Test pressure in psig at time 't' $P_c = \frac{(P_i + 14.7)(T_t + 273)}{(T_i + 273)} - 14.7$

$$\text{Percent Pressure Drop} = \frac{P_c - P_t}{P_c} \times 100$$

TIME (min.)	T_t TEMP. READING (deg. C)	P_t GAUGE READING (psig)	P_c CORRECTED PRESSURE (psig)	PRESSURE DROP (%)
0				
20				
30				
40				
50				
60				

PASS/FAILURE: _____ RETEST (YES/NO)

DESCRIPTION/NATURE OF LEAKS AND REPAIRS OF RETEST SEGMENT:

EXAMPLE CALCULATION SHEET

GIVEN: $P_i = 10$ psig
 $T_i = 21.1$ deg. C = 70 deg. F

and at time t = 60 minutes

$P_i = 10.05$ psig
 $T_t = 23.0$ deg. C = 73 deg. F

Calculated Corrected Initial Pressure

$$P_c = \frac{(10.0 + 14.7)(23.0 + 273) - 14.7}{(21.1 + 273)}$$

$$P_c = 24.85 - 14.7 = 10.15 \text{ psig}$$

Calculate Percent Pressure Loss

$$\% \text{ Pressure Loss} = \frac{10.15 - 10.05}{10.15} \times 100 = \underline{0.98\%} < 1\% \text{ ok}$$

NOTE: The difference between the corrected pressure reading (P_c) and the gauge reading (P_t) cannot differ by more than 1 percent of the corrected pressure reading (P_c) (i.e., .105 @ 10.5 psig) over a time interval of 60 minutes.

SECTION 312050 - EARTHWORK FOR SOLID WASTE

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. Earthwork, which includes procurement of fill material (imported), excavation, placing and compacting fill and backfill, transportation and storage of excess earthwork materials
2. Disposal of unsuitable soils, waste, and surplus materials.
3. Supplemental work necessary to complete grading of developed areas to conform with lines, grades, and slopes indicated on Drawings.

- B. Related Requirements:

1. Section 013526 "Governmental Safety Requirements" for Safety, Health, and Emergency Response.
2. Section 312333 "Trenching and Backfilling" for Trenching, Bedding, and Backfill.
3. Section 312500 "Erosion and Sedimentation Controls" for Sedimentation and Erosion Control.
4. Section 329200 "Turf and Grasses" for Sodding and Seeding.

1.3 DEFINITIONS

- A. Percent Compaction: Required in-place dry density of material, expressed as a percentage of maximum dry density of same material, as determined in the laboratory by ASTM Test Method D1557 (Modified Proctor).
- B. Optimum Moisture Content: Moisture content (percent by dry weight) corresponding to the maximum dry density of the same material as determined by ASTM D1557.
- C. Moisture-Sensitive Soil: On-site soil containing more than five percent fines (silt- or clay-sized particles) based on the fraction passing the 3/4-inch sieve.
- D. In-the-Dry: An excavation subgrade where groundwater level has been lowered to at least two feet below the lowest level of excavation, is stable with no ponded water, mud, or muck and able to support construction equipment without rutting or disturbance and suitable for placement and compaction of fill material, pipe or concrete foundations.
- E. Structures: Buildings, wet wells, manholes and below grade vaults, pipelines and utilities, pavements, and slabs-on-grade both above and below ground.

- F. Unsuitable Soil: Existing fill materials, organic soils, weak native soils, or clays with a plasticity index greater than 30.
- G. Objectionable Material: Topsoil, organic matter, contaminated soil, construction debris, perishable materials, snow, ice, frozen earth, and rocks or lumps of cemented soils over 6 inches in maximum dimension.
- H. Overexcavation: Removal of Unsuitable Soil or Objectionable Material at or below normal grade of excavation or subgrade as indicated on Drawings.
- I. Subgrade: Required surface of subsoil, borrow fill or compacted fill. This surface is immediately beneath site improvements, especially dimensioned fill, paving, or other surfacing material.
- J. Finished Grade: Required final grade elevation indicated on Drawings. However, spot elevations take precedence over proposed contours.
- K. Coverage: The pass of compaction equipment over complete surface area of exposed lift or subgrade to receive compaction.

1.4 ACTION SUBMITTALS

- A. Construction Work Plan:
 - 1. Proposed methods of construction, including, earthwork operations, excavation limits, fill material moisture conditioning and handling, compaction equipment, and material sources for various portions of work.
 - 2. Additional submittal requirements related to schedule, sequence of work, etc. may be necessary for some projects.
- B. Temporary Excavation Slope Stability Evaluation:
 - 1. Prepared by a professional Engineer, licensed in the State of the project, for temporary slopes over 20 feet in height or where existing or proposed facilities or property limits are located at top of slope and within a distance from top of slope equal to slope height.
- C. Site Characterization of Off-Site Borrow Sources:
 - 1. Submit for review at least three weeks prior to use as an off-site borrow source. No soil or crushed stone from off-site allowed without approval.
 - 2. Site Data: Information regarding off-site source and material, as follows:
 - a. Location of site.
 - b. Present and past usage of source site and material.
 - c. Any previously existing report(s) associated with an assessment of source site as it relates to presence of oil or hazardous materials.
 - d. Location within site from which material will be obtained.
- D. If the material that arrives on-site does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the following of the Contractor:

1. Quality Control Testing of Off-Site Borrow Materials:
 - a. Chemical Analysis Data if suspected of being contaminated, perform analyses at no additional cost. Not anticipated for commercial borrow sources and will not be required if site characterization show off-site borrow sources as acceptable.
 - b. Obtain and test off-site borrow samples in accordance with criteria established by Engineer. Submit results for approval prior to use on site.
2. Samples: Provide samples of each granular fill and coarse aggregate source. Take samples prior to delivery and as material is delivered onsite or throughout stockpile. Sample in accordance with the frequencies in Article "Quality Assurance." Take samples in presence of Engineer's representative.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Test Reports, if required: For each type of fill material, by a qualified testing agency:
 1. Conformance Testing:
 - a. Submit laboratory report at least 72 hours prior to importing or placing fill, signed, and sealed by a licensed Professional Engineer in state of the project, as specified in Article "Quality Assurance."
 - b. Include name of material, intended use, and location of placement.
 2. Field Density Tests:
 - a. Map showing density test numbers and locations.
 - b. Report signed and sealed by licensed Professional Engineer in state of the project, as specified in Article "Quality Assurance."

1.6 QUALITY ASSURANCE

- A. Excavation, trenching, sheeting, bracing, and similar work shall comply with requirements of OSHA excavation safety standards, 29 CFR Part 1926 Subpart P and State and local authorities having jurisdiction. Where conflict between OSHA, State and local regulations exists, apply most stringent requirements.
- B. Excavation, trenching, sheeting, bracing, and similar work shall comply with requirements of the Florida "Trench Safety Act", CS/SB 2626, which incorporates by reference, OSHA excavation safety standards, 29 CFR 1926 Subpart P.
- C. If the material that arrives on-site does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the following of the Contractor:
 1. Purpose of quality assurance testing is to assure that the supplied granular fill materials from each source conform to Specifications. Field quality control procedures assure that subbase, etc. has been installed in accordance with Specifications.

2. Suitability of Existing Subgrade Soil: At structures, prior to placement of bedding material, liner materials, concrete work mats, structural fill or structural concrete, coordinate with or Soils Testing Laboratory to verify.
3. Backfill and Fill: Prior to and during placement, coordinate with or Soils Testing Laboratory Insert entity to perform in-place soil density tests to verify that backfill/fill material has been placed and compacted in accordance with requirements specified herein. Provide minimum 48 hours' notice prior to placement of backfill and fill.
4. Subgrades: Do not cover with fill nor fill placed without observation or testing, and approval by Soils Testing Laboratory. Earthwork activities performed without properly scheduled inspection are subject to removal and replacement or additional testing as directed by Engineer at no cost.
5. Open Areas (no roads, berms, or pipe trenches): Conduct particle size analyses on samples taken from each 5,000 cubic yards of installed material, and/or when a change in fill is observed, to determine particle size distribution. Conduct tests in accordance with ASTM D6913 and ASTM D7928.
6. Field Density and Moisture Content: Determine on each 20,000 square feet of each lift of installed material. Correlate use of nuclear density testing (ASTM D6938) with Modified Proctor. Perform at least one Modified Proctor (ASTM D1557) laboratory compaction test per 15,000 cubic yards of uncompacted material or when a change in fill is observed. Use extreme care when measuring above a geomembrane system to avoid damage.
7. Road Bases, Berms, and Pipe Trenches: Determine field density and moisture content for at least every 250 linear feet of each lift of compacted backfill.
8. Testing:
 - a. Conformance Testing: At a minimum, test materials listed under Part 2 of this section that are from onsite or offsite sources, as required. Test each 5,000 cubic yards of material delivered (one test minimum) to verify conformance with specifications.
 - b. Chemical Analyses: If requested, sample each proposed material for the following analyses:
 - 1) Volatile Organic Compounds, (EPA 8240 plus Hazardous Substance List (HSL) Parameters).
 - 2) Acid and Base Neutral Extractable Organic Compounds (EPA 8270).
 - 3) Pesticides/PCBs (EPA 8080).
 - 4) Total Petroleum Hydrocarbons (Infrared Method) (EPA 9071/418.1).
 - 5) Thirteen Priority Pollutant Metals (EPA 7000 Series).
 - 6) Total Cyanide (EPA 9012).

D. Qualifications:

1. Chemical Analytical Laboratory: Certified by governing agency, for required analyses with qualifications meeting ASTM D3740.
2. Testing Agency Qualifications: Qualified according to ASTM D3740. Have ASTM certifications for test methods to be used. Professional geotechnical engineer licensed in the State of the project.
3. Lab Sampler: Minimum three years sample collection experience.

E. Soil Testing:

1. Prior to and during general placement of fill, Engineer may select areas for testing degree of compaction obtained. Cooperate fully in obtaining information desired.

2. Contractor to pay for laboratory and in-place density testing and costs involved in retesting materials due to deficient test results (to the satisfaction of the Engineer).

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Use materials for fill as described below.

1. Supplier shall show evidence of an adequate supply of material which is relatively homogenous within a designated mine area which is properly permitted by appropriate Federal, State, and local agencies.

B. Soil Fill:

1. If the material that arrives on-site does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the following of the Contractor:
2. Common Fill: Fill for backfill, embankments and other general fill requirements specified other than those listed:
 - a. Consist of mineral soils substantially free of clay, organic material, loam, wood, trash, and other objectionable material that may be compressible, degradable or which cannot be compacted properly.
 - b. Cannot contain stones or chunks larger than 6 inches in any dimension, broken concrete, masonry, rubble, or similar materials. Common fill to be used for landfill gas pipe backfill will require additional processing and shall not contain any stones or chunks larger than 2 inches in any dimension.
 - c. Shall not contain greater than 20 percent fines (passing the No. 200 sieve).
 - d. Can be readily spread and compacted during filling.
 - e. Consist of sand, sand with gravel, sand with silt, sand with clay, silty sand, or clayey sand, classified as SP, SW, SP-SM, SP-SC, SW-SM, SW-SC, SM, or SC in accordance with the Unified Soil Classification System, ASTM D2487.
 - f. Do not use soils containing more than five percent by weight of organic materials (ASTM D2974), a Plasticity Index (ASTM D4318) greater than ten percent, or a Liquid Limit (ASTM D4318) greater than 40 percent. Ensure particle size gradation (ASTM D6913 and ASTM D7928) is within the following limits:
 - g.

Sieve Size	Percent Finer by Weight
6-in	100
No. 4	70-100
No. 40	5-100
No. 200	0-20
3. Perform screening required to meet these specifications, including the two-inch maximum size, in any dimension. Cover costs of testing and evaluation. Be responsible for coordinating testing, including sampling and shipment to laboratory. If test results are unsatisfactory, bear costs involved in correcting deficiencies in compacted materials and acceptance testing to the satisfaction of Engineer.

PART 3 - EXECUTION

3.1 EXCAVATION

- A. Include material of every description and of whatever substance encountered. Cut pavement with a saw, wheel or pneumatic chisel along straight lines before excavating.
- B. In general, on-site soils can be excavated using standard earthmoving equipment. Do not plough earth, scrape, or dig with machinery so near to finished subgrade as to result in excavation of, or disturbance of material below grade.
- C. Excavate to grade indicated on Drawings and in widths sufficient for laying pipe, construction of structure, bracing, and for placement and compaction of backfill.
- D. Perform excavation in the dry and accomplished by methods which preserve natural undisturbed condition of subgrade soils.
- E. Moisture Sensitive Soils are particularly susceptible to disturbance due to construction operations. When excavation is to end in such soils, use a smooth edge bucket to excavate last one foot of depth.
- F. If bottom of any excavation is taken out below limits indicated on Drawings, specified, or directed by Engineer, refill with compacted common fill, compacted screened gravel, or lean concrete or other material satisfactory to Engineer, with at no additional cost.
- G. When excavation has reached prescribed depths, notify Engineer. If materials and conditions are not satisfactory to Engineer, Engineer will issue instructions as to procedures. Engineer will be the sole judge as to whether work has been accomplished satisfactorily.
- H. Perform over-excavation at request of Engineer to remove Unsuitable Soil, Objectionable Material, or other materials as determined by Engineer to such depth and width as Engineer may direct. Replace with suitable material as directed by Engineer for which compensation will be made in accordance with Article 11 of the General Conditions.
- I. During wet or freezing weather, or in areas where exposed subgrade consists of Moisture-Sensitive Soils, take measures to protect foundation excavations once they have been approved by Engineer. These measures may include, but are not limited to, placing insulation blankets, placing a layer of pea gravel, crushed rock, or lean concrete on exposed subgrade, or covering exposed subgrade with a plastic tent. If additional overexcavation is required because subgrade was not protected against wet or freezing weather, cover the cost of such additional work.
- J. Carry out excavation for pipelines beneath structures and excavation for footings "in the dry" and in a manner which will preserve the undisturbed state of subgrade soils.
- K. Where excavation is required below, excavate overlying fill soils, and stockpiled separately. Test excavated fill to determine its suitability for reuse as Common Fill. Segregate deleterious or unsuitable materials in overlying fill from remainder of excavated fill prior to reuse.

3.2 TRENCH EXCAVATION AND BACKFILLING

- A. Excavate trenches required for installation of pipes to depths indicated on Drawings and in such a manner and to give suitable room for laying pipe or installing ducts within trenches, for bracing and supporting, and for pumping and drainage facilities.

3.3 COMPACTION

- A. Place common fill shall be placed in maximum 12-inch-thick loose lifts and each lift compacted using compaction toils to consolidate material in place. The pipe bedding material shall provide continuous support for the pipe and be well compacted and free of material larger than 2 inches in any dimension.
- B. Pipe bedding material may be compacted by tamping with an excavator bucket and/or tracking with tracked equipment if approved by the Engineer.
- C. If the compaction does not appear to meet the criteria established by the Engineer, the Engineer reserves the right to require the following of the Contractor:
 - 1. Common fill shall be placed in layers not to exceed 12 inches in depth and each lift compacted to at least 90 percent of Modified Proctor maximum dry density as determined by ASTM D1557, unless otherwise specified.
 - 2. Compact areas adjacent to structures, and other confined areas inaccessible to self-propelled compaction equipment, with approved hand-guided mechanical compaction equipment. Place fill compacted by hand-guided compactors in 6-inch-thick loose lifts and thoroughly tamped over entire surface to specified compaction. Compaction equipment is subject to approval by Engineer. Do not operate heavy equipment within 5 feet of any structure.
 - 3. Ensure fill material moisture content is within three percent of optimum moisture content as determined by ASTM D1557. Spread material which is too wet on fill area and permitted to dry, assisted by harrowing if necessary, until moisture content is reduced to allowable limits.
 - 4. If Engineer determines that added moisture is required, apply water by sprinkler tanks or other sprinkler systems to ensure uniform distribution of water over area to be treated and give complete and accurate control of the amount of water to be used. If too much water is added, allow area to dry before continuing compaction.
 - 5. Supply hose, piping, valves, sprinklers, pumps, sprinkler tanks, hauling equipment, and other materials and equipment necessary to place water in fill in manner specified.

3.4 DISPOSAL OF UNSUITABLE, WASTE AND/OR SURPLUS EXCAVATED MATERIAL

- A. Unsuitable Soil, Objectionable Material, and Waste and Surplus Excavated Material: Permanently stockpile in area designated on Drawings. Materials may be temporarily stockpiled in an area within limits of construction that does not disrupt construction activities, create any nuisances or safety hazards, or otherwise restrict access to work site.

3.5 DISPOSAL OF SURPLUS MATERIAL

- A. Do not remove or dispose of excavated materials from site except as specified by Engineer. Pile materials neatly to inconvenience, as little as possible, public and adjoining property owners until used or otherwise disposed of as specified below.
- B. Use suitable excavated material for fill embankments or backfill on different parts of work, as required.
- C. Surplus fill shall become the property of Owner and disposed on site by Contractor in an approved location. Stockpile organic materials for Owner's use.

3.6 PROTECTION

A. Sheeting and Bracing:

- 1. Furnish, put in place, and maintain sheeting and bracing as may be required by Federal, State, and local safety requirements to support excavation sides; to prevent movement which could diminish width of excavation below that necessary for proper construction; and to protect adjacent structures from undermining or other damage. If Engineer is of the opinion that at any points sufficient or proper supports have not been provided, they may order that additional supports be put in, and compliance with such order shall not relieve or release responsibility for the sufficiency of such supports. Take care to prevent voids outside of the sheeting. But if voids are formed, immediately fill and ram. Where soil cannot be properly compacted to fill a void, use lean concrete as backfill where soil cannot be properly compacted to fill.
- 2. Construct sheeting outside neat lines of foundation, unless indicated otherwise, to extent deemed desirable for method of operation. Provide plumb and securely braced sheeting tied in position. Provide sheeting and bracing adequate to withstand pressures to which structure or trench will be subjected. Correct movement or bulging which may occur to provide necessary clearances and dimensions.
- 3. Where sheeting and bracing is required to support the sides of excavations for structures, engage a Professional Engineer licensed in the State of the project, to design sheeting and bracing. Provide sheeting and bracing in conformity with the design.
- 4. Leave in place to be embedded in backfill sheeting and bracing not indicated on Drawings but which the Engineer may direct in writing to leave in place at any time during the progress of the work for the purpose of preventing injury to structures, utilities, or property, whether public or private. Engineer may require that timber used for sheeting and bracing be cut off at any specified elevation. Include payment for sheeting to be left in place in Base Bid. Pressure-treat timber sheeting to be left in place adjacent to any structures.
- 5. Carefully remove sheeting and bracing not to be left in place in such manner as not to endanger construction or other structures, utilities, or property. Immediately refill voids left or caused by withdrawal of sheeting with sand by ramming with tools especially adapted to that purpose, or otherwise as may be directed.
- 6. Withdraw no sheeting if driven below mid-diameter of any pipe, and under no circumstances cut off sheeting at a level lower than 1-ft above top of any pipe.

3.7 REMOVAL

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6706-250111
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- A. Stockpile rock and clay, if any, excavated under this Section at an approved area on site for Owner, or to be used for construction as directed by Engineer.

END OF SECTION 312050

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SECTION 312333 - TRENCHING AND BACKFILLING

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 trench excavation, backfilling, and compaction.
- B. Related Requirements:
 - 1. Section 312050 "Earthwork for Solid Waste" for related earthwork activities.

1.3 DEFINITIONS

- A. Percent Compaction: Means at least the stated percentage of maximum density as determined by ASTM D 1557, Method D.

1.4 ACTION SUBMITTALS

- A. Submit proposed method of backfilling and compaction prior to start of Work.
- B. Submit method of excavation and trench support, where necessary, including design of sheeting and bracing with calculations signed and sealed by qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Test Reports: For material excavated from trench for re-use as backfill, by a qualified testing agency.

1.6 QUALITY ASSURANCE

- A. Comply with following regulations:
 - 1. Florida "State Safety Act" (CS/SB 2626).
 - 2. Occupational Safety and Health Administration (OSHA): 29 CFR Part 1926 Subpart P.

- B. Provide excavation, trenching, related sheeting, bracing, and related materials to comply with requirements of the Florida "State Safety Act" (CS/SB 2626) which incorporates, by reference, OSHA's excavation safety standards, 29 CFR 1926 Subpart P.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store excavated materials according to Section 312500 "Erosion and Sedimentation Control" to prevent erosion of soil type materials and contamination of adjacent water sources.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine that erosion and sedimentation controls are in place and comply with project requirements and authorities having jurisdiction.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Where excavation activities occur across active vehicular or pedestrian circulation paths, use temporary controls specified in Division 01 to maintain circulation during operations required by this Section. Maintain temporary controls for each day circulation paths are restricted.
- B. Coordinate work of this Section with materials specified in other Sections of Division 31.
- C. Identify required lines, levels, contours, and datum locations.
- D. Protect features to remain-in-place including benchmarks, existing structures, existing piping, etc. from excavating equipment and vehicular traffic.
- E. Maintain and protect above and below grade utilities indicated to remain.

3.3 TRENCH EXCAVATION

- A. Trench excavation includes material of every description and substance encountered, except rock and boulders. Strip and stockpile topsoil from grassed areas crossed by trenches.
 - 1. At Contractor's option when required, topsoil may be disposed of and replaced with approved topsoil of equal quality.
- B. While excavating and backfilling is in progress, maintain traffic and protect utilities and other property.

- C. Excavate trenches to indicated depths and in widths sufficient and of practical minimum for pipe laying, bracing, and pumping and drainage facilities.
- D. Accomplish excavation and dewatering by methods preserving undisturbed state of subgrade soils. Excavate trench by machinery to or just below designated subgrade, if material remaining in trench bottom is no more than slightly disturbed.
 - 1. Remove subgrade soils that become soft, loose, quick, or otherwise unsatisfactory due to inadequate excavation, dewatering, or other construction methods and replace with screened gravel fill acceptable to the Engineer at Contractor's expense.
- E. Use care when working in clay and organic silt soils, which are particularly susceptible to disturbance due to construction operations. When excavation is to end in such soils, use a smooth-edge bucket to excavate the last 12 inches of depth.
- F. Where pipe is to be laid in screened gravel bedding, excavate trench by machinery to normal depth of pipe, provided material remaining in trench bottom is no more than slightly disturbed.
- G. Where pipe is to be laid directly on trench bottom, manually perform final excavation, providing a flat-bottom, true to grade upon undisturbed material. Make bell holes required by project conditions.

3.4 DISPOSAL OF MATERIALS

- A. Stack excavated material without excessive surcharge on trench bank.. Avoid inconvenience to traffic and abutters. Segregated excavated material for use in backfilling as specified below.
- B. Do not remove excavated material from work site, except as directed by the Engineer. When removal of surplus materials is approved by the Engineer, dispose of such surplus material in approved designated areas.
- C. Should conditions make it impracticable or unsafe to stack material adjacent to trench, haul and store material at a location provided. When required, re-handled and use it in backfilling trench.

3.5 SHEETING AND BRACING

- A. Provide and maintain sheeting and bracing required by Federal, State, or local safety requirements to support sides of excavation and prevent loss of ground which could endanger personnel, damage, adjacent structures, or delay the work.
 - 1. Engineer may order additional supports placed at Contractor's expense if it is determined that at any point sufficient or proper supports have not been provided. Compliance with such order shall not relieve Contractor from their responsibility for sufficiency of such supports. Take care to prevent voids outside of sheeting; if voids are formed, immediately fill and ram them.
- B. When moveable trench bracing such as trench boxes, moveable sheeting, shoring or plates are used to support trench sides, take care in placing and moving the boxes or supporting bracing to prevent pipe movement, disturbance of pipe bedding, or screened gravel backfill.

1. Rigid Pipe Installation (such as R.C., V.C., A.C.): Raise that portion of box extending below mid-diameter above this point prior to moving box ahead to install next pipe. Perform to prevent separation of installed pipe joints due to box movement.
 2. Flexible Pipe Installation (such as PVC): Do not allow trench boxes, moveable sheeting, shoring, or plates to extend below mid-diameter of pipe. As trench boxes, moveable sheeting, shoring, or plates are moved, place screened gravel to fill voids created. Re-compact screened gravel and backfill to provide uniform side support for pipe.
- C. Engineer may give permission to use steel sheeting in lieu of wood sheeting for entire job wherever sheeting use is necessary. Include cost for use of sheeting in bid items for pipe, including full compensation for driving, bracing, and later removal of sheeting.
- D. Carefully remove sheeting and bracing in manner to not endanger construction of other structures, utilities, or property, whether public or private. Immediately refill voids left after withdrawal of sheeting using sand by ramming with tools especially adapted to that purpose and watering or otherwise directed by the Engineer.
- E. No payment will be given for sheeting, bracing, or other support during progress of the work. No payment will be given for sheeting left in trench for Contractor's convenience.
- F. Leave sheeting driven below mid-diameter of pipe in place from driven elevation to at least 12 inches above top of pipe.

3.6 TEST PITS

- A. Excavation of test pits may be required for purpose of locating underground utilities or structures as an aid in establishing the precise location of new work.
- B. Backfill test pits as soon as desired information has been obtained. Maintain backfilled surface appropriate for travel until resurfaced.

3.7 EXCAVATION BELOW GRADE AND REFILL

- A. Drain trench completely and effectively be in-the-dry, whatever the nature of unstable material encountered or groundwater conditions.
- B. If Contractor excavates below grade through error or for their own convenience, through failure to properly dewater the trench, or disturbs subgrade before dewatering is sufficiently complete, the Engineer may direct Contractor to excavate below grade as set forth in following Paragraph, where work shall be performed at its own expense.
- C. If material at trench bottom consists of fine sand, sand and silt or soft earth which may work into the screened gravel, even with effective drainage, remove subgrade material to extent directed. Refill excavation with a 6-inch layer of coarse sand or a mixture graded from coarse sand to fine pea stone to form a filter layer preserving voids in pipe gravel bed. Composition and gradation of gravel shall be approved by the Engineer prior to placement. Place screened gravel in 6-inch layers thoroughly compacted up to normal grade of pipe. If directed by the Engineer, use bank-run gravel for refill of excavation below grade.

3.8 BACKFILLING

- A. Begin backfilling as soon as practicable after laying and jointing pipe and continue expeditiously. To prevent longitudinal pipe movement, do not dump backfill material into trench and then spread, until selected material or screened gravel has been placed and compacted to a level at least 12 inches over the pipe.
- B. Bring backfill up evenly on all sides. Thoroughly compact each layer of backfill material by rolling, tamping, or vibrating with mechanical compacting equipment or hand tamping to 90 percent compaction according to ASTM D 1557. If rolling, use a suitable roller or tractor being careful to compact fill throughout full width of trench.
- C. Do not compact by puddling or water jetting.
- D. Use hand or pneumatic ramming with tools weighing at least 20 pounds for compacting in confined areas. Spread and compact material in layers not exceeding 6 inches thick, an uncompacted loose measurement.
- E. Use granular fill material as backfill around structures. Spread and compact specified backfill under and over pipes connected to structures.
- F. Do not place bituminous paving in backfill. Do not use frozen material under any circumstances.
- G. Broom and hose-clean road surfaces immediately after backfilling. Employ dust control measures throughout construction period.

3.9 RESTORING TRENCH SURFACE

- A. Where trench occurs adjacent to paved streets, in shoulders, sidewalks, or in cross-country areas, thoroughly consolidate backfill and maintain surface as the work progresses. If settlement takes place, immediately deposit additional fill to restore ground level.
- B. Restore surface of driveways or other areas which are disturbed by trench excavation to a condition at least equal to that existing before work began.
- C. In areas where pipeline passes through grassed areas, remove and replace sod or loam and seed surface at Contractor's own expense.

END OF SECTION 312333

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6706-250111
November 2020

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SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

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. Sediment Fences.
 - 2. Construction Entrances.
- B. Related Sections:
 - 1. Section 329200 - Turf and Grasses.

1.3 REFERENCE STANDARD

- A. EPA document titled: “Stormwater Management for Construction Activities – Developing Pollution Prevention Plans and Best Management Practices” document number EPA 832-R-92-005, dated 1992, or most recent edition. State or appropriate Conservation Commission standards can be substituted for the EPA standard if the State or Conservation Commission standard is equal to, or more detailed than, the EPA standard.

1.4 ACTION SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
 - 1. Submit, within 10 days after award of Contract, technical product literature for all commercial products.

1.5 INFORMATIONAL SUBMITTALS

- A. Stormwater Pollution Prevention Plan (SWPPP) as specified in “Quality Assurance” article.
- B. Copy of EPA NPDES Notice of Intent to Discharge submitted to the EPA as specified in “Quality Assurance” article.

1.6 CLOSEOUT SUBMITTALS

- A. Section 017700 “Closeout Procedures”: Requirements for submittals.

1.7 QUALITY ASSURANCE

- A. Prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the U.S. Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) General Permit applicable to this work document number EPA 832-R-92-005, dated 1992, or most recent edition.
- B. Prepare and submit the NPDES Notice of Intent to Discharge to the applicable Florida Department of Environmental Protection office in accordance with EPA regulations.
- C. Perform Work according to State of Florida Department of Transportation standards.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.

PART 2 - PRODUCTS

2.1 SILT FENCE

- A. Silt fence filter fabric shall be a woven, polypropylene, ultraviolet resistant material meeting minimum requirements below:

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632/ D 4632M
Elongation at Failure (%)	20	ASTM D 4632/ D 4632M
Mullen Burst Strength	300 psi	ASTM D 3786/ D 3796M
Puncture Strength (lbs)	60	ASTM D 4833/ D 4833M
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533/ D 4533M
Flow through Rate (gal/min/sf)	25	ASTM D 4491/ D 4491M
Equivalent Opening Size	40 – 80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355/ D 4355M

- B. Products: Provide one of the following:

1. “Mirafi FW402,” by TenCate Geosynthetics.
2. “Carthage 15%,” by Carthage Mills.
3. “HSP2.” by ACF Environmental, Inc.

4. Or equal.
- C. Sediment fence shall be a prefabricated commercial product made of a woven, polypropylene, ultraviolet resistant material such as “Envirofence” by Mirafi Inc., Charlotte, NC or equal.
- D. Posts: Constructed of hardwood with minimum diameter thickness of 1.5 inches .
- E. Tie wires for securing silt fence fabric to wire mesh shall be light gauge metal clips (hog rings), or 1/32-inch diameter soft aluminum wire.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 017300 - Execution: Verification of existing conditions before starting work.
- B. Verify compacted stabilized soil is acceptable and ready to support devices and imposed loads.
- C. Verify gradients and elevations of base or foundation for other work are correct.

3.2 SILT FENCE

- A. Position sediment fences as indicated on the Drawings and to prevent off site movement of sediment produced by construction activities as directed by the Engineer. Areas beyond limits of silt fence shall be undisturbed or stabilized.
- B. Dig trench approximately 6-inch wide and 6-inch deep along proposed fence lines.
- C. Drive stakes, 10 feet on center (maximum) at back edge of trenches. Drive stakes 2 feet (minimum) into ground.
- D. Hang filter fabric on posts carrying to bottom of trench with about 4 inches of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and maintain secure both ways.
- E. Backfill trench with excavated material and tamp.
- F. Install pre-fabricated silt fence according to manufacturer's instructions.

3.3 CONSTRUCTION ENTRANCE

- A. Construct entrance with minimum of 6-inch of course aggregate at all points of ingress/egress.
- B. Width: Minimum 20 feet, increased as needed for typical construction vehicles.
- C. Minimum Length: 50 feet where soils are course grained.
- D. Install filter fabric below aggregate.

- E. Maintain entrance throughout construction, adding more aggregate or increasing length as needed.

3.4 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.
- C. Stockpile and waste pile heights shall not exceed 35 feet. Slope stockpile sides at 2:1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.
 - 1. During non-germinating periods, apply mulch at recommended rates.
- E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

3.5 FIELD QUALITY CONTROL

- A. Section 017300 - Execution: Field inspecting, testing, adjusting, and balancing.
- B. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

3.6 CLEANING

- A. Section 017300 "Execution" and 017700 "Closeout Procedures": Requirements for cleaning.
- B. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove, and dispose of sediment.
- C. Do not damage structure or device during cleaning operations.
- D. Do not permit sediment to erode into construction or site areas or natural waterways.
- E. Clean channels when depth of sediment reaches approximately one-half channel depth.

3.7 PROTECTION

- A. Section 017300 "Execution": Requirements for protecting finished Work.

END OF SECTION 312500

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. Seeding.
 - 2. Hydroseeding.
 - 3. Sodding.
 - 4. Erosion-control material(s).

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See and drawing designations for planting soils.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For landscape Installer.

- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand 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 or plugs. Include identification of source and name and telephone number of supplier.
- C. Product Certificates: For fertilizers, from manufacturer.
- D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
 - 1. 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 compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in the Turfgrass Producers International's (TPI) "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. 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 FIELD CONDITIONS

- A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with Association of Official Seed Analysts (AOSA's) "Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species:
1. Quality: State-certified seed of grass species as listed below for solar exposure.
 2. Full Sun:
 - a. 20 percent Bermudagrass (*Cynodon dactylon*).
 - b. 80 percent Argentine Bahia (*Paspalum notatum*).

2.2 TURFGRASS SOD

- A. Turfgrass Sod: Approved, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.
- B. Turfgrass Species: Argentine Bahia (*Paspalum notatum*).
- C. Before being cut and lifted the sod shall have been mowed three times with the final mowing not more than a week before cutting into uniform dimensions.
- D. Sod shall be harvested, delivered, and installed within a period of seventy-two hours.

2.3 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: 6 percent of actual nitrogen, 6 percent phosphorous, and 6 percent potassium, by weight.

2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
1. Composition: 6 percent nitrogen, 6 percent phosphorous, and 6 percent potassium, by weight.
 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.4 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. 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.

2.5 PESTICIDES

- A. General: Pesticide, registered and approved by the 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 Nonselective): 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 Nonselective): 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 installation and performance of the Work.
 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. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
3. Uniformly moisten excessively dry soil that is not workable, or which is 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 Engineer 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 LIMING AND FERTILIZING

A. Apply lime at application rate recommended by soil analysis.

B. Work lime into top 6 inches of soil.

C. Apply fertilizer at application rate recommended by soil analysis.

D. Apply fertilizer after smooth raking of topsoil and prior to installation of sod.

E. Apply fertilizer no more than 48 hours before laying sod.

F. Mix fertilizer thoroughly into upper 4 inches of topsoil.

G. Lightly water soil to aid dissipation of fertilizer.

3.4 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.

1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
2. Do not use wet seed or seed that is moldy or otherwise damaged.
3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

- B. Sow seed at a total rate of 5 to 8 lb./1000 sq. ft..
- C. Rake seed lightly into top 1/8-inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes exceeding 1:4 with erosion-control blankets installed and stapled according to manufacturer's written instructions.
- E. Protect seeded areas with erosion-control mats where indicated on Drawings; install and anchor according to manufacturer's written instructions.
- F. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.
 - 1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
 - 2. Bond straw mulch by spraying with asphalt emulsion at a rate of 10 to 13 gal./1000 sq. ft.. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, commercial 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 fiber-mulch manufacturer's recommended tackifier.
 - 2. Spray-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. Spray-apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

3.6 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 soil or sod during installation. Tamp and roll lightly to ensure contact with soil, 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 slopes exceeding 1:3.

2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- 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.

3.7 TURF MAINTENANCE

- A. General: 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 remulch 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.
 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to 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 one-third of grass height. Remove no more than one-third 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 bahiagrass to a height of 2 to 3 inches.

3.8 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Engineer:

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.
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.

3.9 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to 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 Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.10 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. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. 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.
- D. Remove nondegradable erosion-control measures after grass establishment period.

3.11 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
1. Sodded Turf: 30 days from date of Substantial Completion.

END OF SECTION 329200

SECTION 330511 - SIDESLOPE COLLECTORS

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 requirements for furnishing all labor, materials, equipment and incidentals required and install landfill gas sideslope collectors as shown on the Drawings and as specified in this Section .
- B. This Section is intended to cover the successful completion of sideslope collectors and does not cover all variations that may occur during sideslope collector construction.
- C. Related Requirements:
 - 1. Section 013526 “Governmental Safety Requirements.”
 - 2. Section 312050 “Earthwork for Solid Waste.”
 - 3. Section 310529 “High Density Polyethylene (HDPE) Pipe for Landfill Gas Collection Systems.”

1.3 ACTION SUBMITTALS

- A. Submit the following information in accordance with Section 013300:
 - 1. A complete list of construction material and supplies as specified herein, including the name of the manufacturer, for the items listed below:
 - a. Solid pipe.
 - b. Perforated pipe.
 - c. Caps, collars, and tees.
 - d. River rock or crushed granite.
 - e. Geomembrane including roll certifications.
 - 2. Material samples of the washed aggregate.
 - 3. Health and Safety Plan.
- B. Upon completion of each sideslope collector, submit to the Engineer a report to include the following:
 - 1. The name and location of the job.
 - 2. The date of installation (start and finish).
 - 3. Sideslope collector number.

4. As-built survey, which includes coordinates and the top of pipe elevations (start and end of solid and perforated piping) for each collector.
5. Other pertinent data requested by the Engineer.

1.4 QUALIFICATIONS

- A. The Contractor responsible for constructing gas systems shall be licensed in the State of Florida, employing only competent workers for the execution of this work and all such work shall be performed under the direct supervision of an experienced superintendent satisfactory to the Engineer.
- B. The Engineer and Owner may make any other investigations deemed necessary to determine the ability of the Contractor to perform the work and the Contractor shall furnish to the Engineer all such information and data for this purpose as the Engineer may request.
- C. Complete the work described in accordance with applicable portions of the requirements of the Federal, State, or local authorities as well as per 29 CFR 1910, OSHA Standards for Hazardous Waste site workers.
- D. The installation crew shall be trained and experienced as required by OSHA for hazardous waste site workers.
- E. Furnish a list of all personnel who will be involved in the project and their corresponding qualifications and experience.

1.5 HEALTH AND SAFETY PROGRAM

- A. The work to be performed at this site involves, but is not necessarily limited to, the following possible conditions and hazards:
 1. Typical subsurface conditions at the landfill may include sand, sludge, compost, rock, municipal refuse and obstructions such as large buried items. Precautions will be necessary to address excavation safety.
 2. There is a potential for a health hazard exposure to an explosive atmosphere to occur.
- B. Develop and implement a health and safety plan. The plan shall be consistent with the requirements of Section 013526 and the following:
 1. OSHA Safety and Health Standards 29 CFR 1910 (General Industry), US Department of Labor, Occupational Safety and Health Administration, 1984. Hereafter referred as "29 CFR 1910." Available by calling 513-533-8236.
 2. OSHA Safety and Health Standards 29 CFR 1926/1910 (Construction Industry), US Department of Labor, Occupational Safety and Health Administration, 1985. Hereafter referred to as "CFR 1926/1910."
 3. Standard Operating Safety Guidelines, US Environmental Response Branch, Hazardous Response Support Division, Office of Emergency and Remedial Response, November 1984. Hereafter referred to as "EPA Guidelines."
- C. The plan shall include but not necessarily be limited to, the following components, as appropriate:

1. Characterization and Evaluation.
2. Safe Work Practices.
3. Engineering Safeguards.
4. Medical Surveillance.
5. Environmental and Personnel Monitoring.
6. Personnel Protective Equipment.
7. Training.
8. Standard Operating Procedures.
9. Control and Decontamination.
10. Emergency and Contingency Planning.
11. Logs and Reports.
12. Hazard Communication Reports.
13. Material Handling and Disposal.
14. Sanitation.
15. Excavation.

- D. Determination of the appropriate level of worker safety equipment and procedures shall be the responsibility of the Contractor as a result of initial site survey, review of existing data and continued safety and health monitoring program performed in accordance with the requirements specified herein.
- E. The plan shall be approved by signature of a designated representative of the Contracting firm, stating that the plan is in compliance with 29 CFR 1910 and 29 CFR 1926/1910. The signed plan shall be furnished to the Owner and Engineer prior to commencing site work activities as evidence of compliance.
- F. Should the Contractor seek relief from, or substitution for, any portion or provision of the plan, such relief or substitution shall be at the sole risk of the Contractor and shall be preceded by notification of the Engineer in writing. The requested modification shall not be implemented until receipt of notification of change is confirmed in writing by the Engineer.
- G. Should the Contractor modify any portion or provision of the plan, notify the Engineer in writing of such modifications.
- H. Any disregard for the provision of these Health and Safety requirements shall be deemed just and sufficient cause for termination of the Contract without compromise or prejudice to the rights of the Contractor.

1.6 TRAINING

- A. The Contractor shall be required to certify that all his/her personnel performing site activity that may require an upgrade to respiratory protection, have received appropriate safety training in accordance with 29 CFR 1910.134 provided by the Contractor. Documentation of such training shall be submitted to the Engineer before any employees will be allowed to work.
- B. Instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury.

- C. All employees required to enter into a confined or enclosed space shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken and in the use of protective and emergency equipment required. Comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.
- D. Additionally, the Contractor shall be responsible for and shall guarantee that, personnel not successfully completing the required training are not permitted to perform work that required upgrade to respiratory protection.

1.7 MEDICAL SURVEILLANCE

- A. Persons shall not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The respirator user's medical status shall be reviewed annually.

1.8 PERSONAL PROTECTIVE EQUIPMENT

- A. Furnish all onsite personnel with appropriate personal safety equipment and protective clothing and ensure that all safety equipment and protective clothing is kept clean and well maintained. Protocols formally changing the level of protection shall be described in the health and safety plan. In addition, the following items shall be addressed:
 - 1. All prescription eyeglasses in use on the site shall be safety glasses. Prescription lens inserts shall be provided for full face respirators.
 - 2. Footwear used onsite shall be steel-toed, steel shank safety shoes or boots.
 - 3. A written respiratory protection program addressing site-specific respiratory usage shall be developed and submitted to the Engineer. Programs for respiratory protection shall conform to 29 CFR 1910.134.
 - 4. All onsite personnel shall wear a hard hat when engaging in construction or drilling activities.
 - 5. All personal protective equipment work onsite shall be decontaminated or properly disposed of at the end of the workday.
 - 6. Each respirator shall be individually assigned and not interchanged between workers without cleaning and sanitizing. A procedure for assuring periodic cleaning and maintenance shall be furnished and addressed in the health and safety plan.

1.9 PERSONAL HYGIENE AND DECONTAMINATION

- A. A discussion of personnel decontamination protocols to be followed by site workers shall be submitted as part of the health and safety plan. In addition, the following conditions and procedures shall be followed:
 - 1. Smoking and chewing shall be prohibited except in a designated Contractor provided smoking area.
 - 2. Eating and drinking shall be prohibited except in a designated Contractor provided lunch or break area.
 - 3. All outerwear shall be removed prior to entering lunch area or smoking area and prior to cleansing hands.

4. Contractor personnel shall be required to thoroughly cleanse their hands and other exposed areas before entering the smoking or lunch areas.

1.10 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

- A. Develop contingency plans including evacuation procedures and routes to places of refuge or safe distances from the danger area, for the following potential emergencies: chemical exposure, personal injury, potential or actual fire or explosion, environmental accident (spill or release). In the event of any emergency, without delay: take diligent action to remove or otherwise minimize the cause of the emergency; alert the Engineer and Owner whatever measures might be necessary to prevent any repetition of the conditions or actions leading to, or resulting in, the emergency.
- B. Prearranged emergency medical care services at a nearby medical facility with established emergency routes. The staff at the facility shall be advised of the potential medical emergencies that might result.
- C. Establish emergency communications with health and emergency services. The name of this facility, name of contact, emergency routes and emergency communications arrangement shall be provided in the health and safety plan. In addition, furnish the following equipment:
 1. Provide at least one first aid kit and maintained fully stocked at a first aid station which is in proximity to the work.
 2. Provide 2A-10 B: C type dry chemical fire extinguisher at the site office.
- D. Should any unforeseen or safety-related factor, hazard, or condition become evident during the performance of work at this site, it shall be the Contractor's responsibility to bring such to the attention of the Engineer both verbally and in writing as quickly as possible, for resolution. In the interim, take prudent action to establish and maintain safe working conditions and to safeguard employees, the public and the environment in accordance with the Health and Safety Plan.
- E. Should the Contractor seek relief from, or substitution for, any portion or provision of the plan, such relief or substitution shall be requested of the Engineer in writing. The requested modification will not be implemented until authorized in writing by the Engineer.
- F. Should the Contractor modify any portion or provision of the plan, notify the Engineer in writing of such modifications.
- G. Any disregard for the provision of these Health and Safety requirements shall be deemed just and sufficient cause for termination of the Contract without compromise or prejudice to the rights of the Contractor.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Protect all parts and materials so that no damage, deterioration or contamination shall occur from time of shipment until installation is completed.
- B. If in the opinion of the Engineer, parts and materials are damaged, deteriorated, or contaminated before acceptance of the collector, the material and/or the collector will be rejected. Replace the labor, parts, and materials at no additional cost to the Owner.

- C. Materials shall be stored to ensure preservation of their quality and fitness for work. When deemed necessary, they shall be placed on wooden platforms or other hard clean surfaces and not on the ground. Stored materials shall be located so as to facilitate prompt inspection.

1.12 SITE DESCRIPTION

- A. The Indian River County Landfill is located in Vero Beach, Florida. The locations of the ten sideslope collectors are shown on the Drawings. The collectors shall be installed in the active landfill, which has the potential to contain hazardous or toxic vapors. Possible hazardous vapors that could be released during construction operations include, but are not limited to the following: methane, carbon dioxide, carbon monoxide, hydrogen sulfide, polyvinyl chloride, toluene, and benzene.
- B. The landfill may be undergoing continuous settling and compaction due to the various subsurface waste conditions typical of a municipal solid waste landfill.
- C. The Contractor shall be responsible for providing electrical generating equipment, if needed.

1.13 PROJECT/SITE REQUIREMENTS

- A. Typical subsurface conditions to be encountered at the landfill may include sand, sludge, compost, municipal refuse and obstructions such as large buried items.
- B. Unfavorable subsurface geologic conditions may exist at the site selected for the collectors such as collapse of the trench. If in the opinion of the Contractor the encountered subsurface conditions are unfavorable for the installation of an individual collector due to composition of the refuse, promptly notify the Engineer verbally and in writing, of such conditions.
- C. The information concerning the subsurface conditions and problems of which the Contractor is advised is for the sole purpose of assisting in the preparation of his/her bid. The Owner, Engineer and their consultants do not guarantee the accuracy and the conditions and concerns stated above. These conditions and concerns may not be indicative of the conditions at the site.
- D. In the event subsurface conditions are found to be substantially different from what has been indicated, promptly and before such conditions are disturbed, notify the Engineer verbally and in writing of such conditions.
- E. Take necessary precautions to prevent damage to any above- or below-ground existing structures. Notify the Engineer of any damaged underground structures and make repairs or replacements before backfilling.
- F. During the progress of construction, it is expected that minor relocations of the work might be necessary since the site is an active landfill. Such relocations shall be made only by direction of the Engineer. If obstructions are encountered during construction, notify the Engineer verbally and in writing before continuing with the construction in order that the Engineer may make such field revisions as are necessary. If the Contractor shall fail to so notify the Engineer when an obstruction is encountered and shall proceed with the construction despite this interference, he/she shall do so at his/her own risk. The Contractor shall receive no payment for any footage excavated in an abandoned trench where relocation has not been directed by the Engineer.

1.14 NOTIFICATION

- A. Submit to the Engineer in writing, ten days prior to start of work, the proposed work schedule, including the following:
 - 1. The starting date and order in which the sideslope collectors will be constructed.
 - 2. The completion date of the sideslope collectors.
 - 3. Any anticipated work interruptions of duration greater than 24 hours with exception of weekends and holidays.
- B. No work shall be performed without completing the notification requirements specified above.

PART 2 - PRODUCTS

2.1 DESCRIPTION OF THE SIDESLOPE COLLECTOR

- A. There will be ten sideslope collectors installed. Each sideslope collector will consist of up to three independent sections with wellhead assemblies for each section. The sideslope collector trench shall be approximately 36 inches in width. As shown on the Drawings, the 6-inch HDPE SDR 11 perforated piping shall be centered in the washed coarse aggregate that is wrapped in 8-oz. non-woven geotextile. Perforated piping shall be sloped at a minimum of 1-percent and the solid piping shall be sloped at a minimum of 3-percent to the wellhead trap.
- B. Install sideslope collectors at the locations indicated on the Drawings, unless otherwise approved by the Engineer.
- C. Alternate construction methods may be approved by the Engineer where justified.

2.2 SIDESLOPE COLLECTOR ACCEPTANCE CRITERIA

- A. Each sideslope collector shall be approved based on the following criteria, in the opinion of the Engineer:
 - 1. The sideslope collector is structurally sound in conformance with the Drawings and Specifications.
 - 2. Specified pipe slopes are achieved.
- B. Set all caps, pipes, and coarse aggregate to the depths shown on the Drawings or as directed by the Engineer.

2.3 SOLID AND PERFORATED PIPE

- A. Furnish pipe as shown on the Drawings, in the locations shown. Each pipe length shall be marked with the manufacturer's name or trademark, size, material code and pressure class.
- B. Drill perforations into the pipe at the factory after manufacture. Drilling of pipe perforations in the field is prohibited. Each perforated pipe Type shall be perforated with 90-degree offset as shown in the Drawings.

- C. Refer to Section 310529 for HDPE pipe specifications.

2.4 COARSE AGGREGATE

- A. A coarse aggregate shall be used around all the perforated pipe and 10-feet of solid pipe for each sideslope collector. The material shall be double washed Rounded River Rock or double washed crushed granite with a minimum diameter of 1/2-inch and a maximum diameter of 2 inches. The aggregate shall be placed around and below the pipe and will vary in length as dependent on each collector's completion. The material should be free of roots, trash, and other deleterious material.

2.5 FILL MATERIAL

- A. Any fill material shall consist of select common fill as specified in Section 312050.

2.6 CAPS

- A. The end of each sideslope collector shall have a HDPE cap welded on the last section of perforated pipe as shown on the Drawings.

2.7 GEOCOMPOSITE

- A. Wrap the coarse aggregate with geocomposite provided by the Owner as shown on the Drawings. Heat tack overlapped material.

2.8 GEOMEMBRANE

- A. Cover each sideslope collector trench with a 15-foot wide piece of 40 mil textured HDPE geomembrane. The geomembrane shall be anchored on each side of the trench as shown on the Drawings. The geomembrane shall be manufactured by Solmax/GSE, Agru America, Skaps Industries, or approved equal. (Approximately 2,800 feet of 60 mil textured HDPE geomembrane will be supplied by the Owner from rolls of material located onsite. Only one roll of geomembrane shall be removed from onsite storage to be used at a time. Contractor shall provide additional geomembrane as needed.)

PART 3 - EXECUTION

3.1 PIPE INSTALLATION

- A. Every effort shall be made on the part of the Contractor to assure pipe plumbness and centralization.
- B. The installation of pipe shall be strictly in accordance with the manufacturer's technical data and printed instructions.

3.2 TRENCHING

- A. Dig a trench approximately 36 inches in width at each sideslope collector location as shown on the Drawings.
- B. Material removed from this landfill as a result of trenching shall be disposed of in the active face at the direction of the of the Engineer. Refer to Section 312333 for trench excavation in waste.

3.3 COARSE AGGREGATE AND COMMON FILL INSTALLATION

- A. All coarse-aggregate installation shall be performed in the presence of the Engineer.
- B. Common fill installation shall be performed in the presence of the Engineer.

3.4 SIDESLOPE COLLECTOR ABANDONMENT

- A. If the Contractor fails to meet the Sideslope Collector Acceptance Criteria as stated in Article "Sideslope Collector Acceptance Criteria" above, or abandons a collector because of loss of tools, trench collapse, or other causes related to construction operations, the Contractor shall abandon the sideslope collector. Under these conditions, the Contractor shall receive no payment for time, materials, or work for abandonment and shall receive no compensation for the abandoned collector and shall replace the abandoned collector in accordance with the Contract Documents.
- B. Notify the Engineer immediately if any obstruction is encountered during trenching for a sideslope collector. If directed by the Engineer to abandon a trench, fill the trench with loose waste, or another material approved by the Engineer.
- C. If trench abandonment is directed by the Engineer, the Contractor shall be paid for footage dug at the abandoned trench.

3.5 PROTECTION AND SITE CLEAN-UP

- A. At all times during the progress of the site work, use all reasonable precautions to prevent either tampering with the sideslope collectors or the entrance of foreign material into the coarse aggregate around the pipe before the geotextile is overlapped.
- B. All sideslope collectors shall be protected by the provision of temporary supports or other means of protection approved by the Engineer. The Contractor shall replace any sideslope collector components which are damaged by construction operations at the Contractor's expense.
- C. Immediately upon completion of site work, remove all of the equipment, materials and supplies from the site of the work, remove all surplus materials and debris, fill in all holes or excavations and restore any disturbed areas to their original condition. Properly dispose of the refuse and material removed from the trenching.

END OF SECTION 330511

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6706-250111
November 2020

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SECTION 335133 – LANDFILL GAS EXTRACTION WELLS

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. Landfill gas extraction wells as shown on the Drawings and as specified herein.

- B. Related Requirements:

- 1. Section 310529 “High Density Polyethylene (HDPE) Pipe for Leachate Collection Systems.”
- 2. Section 312050 “Earthwork for Solid Waste” for granular materials.

1.3 ACTION SUBMITTALS

- A. A complete list of construction material and supplies as specified herein, including the name of the manufacturer, for the items listed below:

- 1. Solid Wall pipe.
- 2. Slotted Wall pipe.
- 3. Caps, collars, and tees.
- 4. Stone.
- 5. Bentonite.
- 6. Sand.
- 7. The source and location of potable water supply, written authorization of the suppliers, method of transporting and containing the potable water, if necessary.
- 8. Material samples of the washed gravel.
- 9. Health and Safety Plan.

- B. During all gas extraction well drilling, a daily detailed driller's report shall be maintained and submitted as requested by the Engineer including, but not necessarily limited to the presence of groundwater and/or leachate. The report shall give a complete description of all subsurface material encountered, number of feet drilled, number of hours on the job, shutdown due to breakdown, feet of screen and casing set and other pertinent data requested by the Engineer.

- C. During drilling of each borehole, maintain at the extraction well site a complete log setting forth the following:

- 1. The reference point of all depth measurements.

2. The depth of which each change of material occurs.
3. The identification of the material.
4. The depth of interval of the material.
5. The results of work space monitoring requiring by the Health and Safety Plan.
6. Other pertinent data requested by the Engineer.

1.4 CLOSEOUT SUBMITTALS

- A. Upon completion of each gas extraction well, submit to the Engineer a report to include the following:
1. The name and location of the job.
 2. The date of the borehole drilling (start and finish).
 3. Gas extraction well number and coordinates, if known.
 4. Surface elevation.
 5. Sampling numbers and depths and a description of refuse encountered while drilling.
 6. Thickness of similar strata and apparent changes with depth.
 7. The depth of location of any lost drilling materials, or tools.
 8. The depth, diameter, and description of the gas extraction well casing and screen.
 9. The total depth of the completed gas extraction well.
 10. The nominal hole diameter of the borehole.
 11. Amount and size description of washed gravel and bentonite used.
 12. The amount of grout (number of bags) used.
 13. Other pertinent data requested by the Engineer.

1.5 DESCRIPTION OF THE GAS EXTRACTION WELL

- A. The borehole shall be 36 inches in diameter. The gas wells shall be 6 inches diameter Schedule 80 PVC pipe, installed at various depths by the bucket auger method to an approximate depth of 10-ft above the base of the landfill, or as shown on the Drawings.
- B. Boreholes shall be drilled at the locations indicated on the Drawings, unless otherwise approved by the Engineer. The depth of the borehole from the surface to the bottom of the borehole shall be deemed as the depth of the well. Nothing above the surface shall be considered as part of the depth of the well.
- C. Alternate drilling or construction methods may be approved by the Engineer where justified.

1.6 SITE DESCRIPTION

- A. The Indian River County landfill is located in Vero Beach, FL. The locations of the gas extraction well sites are as shown on the Drawings. The gas extraction wells shall be installed in the landfill, which has the potential to contain hazardous or toxic vapors. Possible hazardous vapors that could be released during drilling operations include, but are not limited to the following: methane, carbon dioxide, carbon monoxide, hydrogen sulfide, polyvinyl chloride, toluene, and benzene.
- B. There is an active landfill gas collection system already in place in the Class I Landfill Segments 1 and 2.

- C. The landfill may be undergoing continuous settling and compaction due to the various subsurface waste conditions typical of a municipal solid waste landfill.
- D. The Contractor shall be responsible for providing electrical generating equipment, if needed.

1.7 DELIVERY, STORAGE AND HANDLING

- A. All parts and materials shall be properly protected so that no damage, deterioration or contamination shall occur from time of shipment until installation is completed.
- B. If in the opinion of the Engineer, parts and materials are damaged, deteriorated, or contaminated before acceptance of the well, the material and/or the gas well will be rejected. Replace the labor, parts, and materials at no additional cost to the Owner.
- C. Materials shall be stored to ensure preservation of their quality and fitness for work. When deemed necessary, they shall be placed on wooden platforms or other hard clean surfaces and not on the ground. Stored materials shall be located so as to facilitate prompt inspection.

1.8 PROJECT/SITE REQUIREMENTS

- A. Typical subsurface conditions to be encountered at the landfill may include sand, sludge, compost, municipal refuse and obstructions such as large buried items.
- B. The Contractor shall be aware that unfavorable subsurface geologic conditions may exist at the site selected for the gas extraction wells such as loss of circulation and collapse of the formation. If in the opinion of the Contractor the encountered subsurface conditions are unfavorable for the installation of an individual gas extraction well due to composition of the refuse, promptly notify the Engineer verbally and in writing, of such conditions.
- C. The information concerning the subsurface conditions and problems of which the Contractor is advised is for the sole purpose of assisting in the preparation of his/her bid. The Owner, Engineer and their consultants do not guarantee the accuracy and the conditions and concerns stated above. These conditions and concerns may not be indicative of the conditions at the site.
- D. In the event subsurface conditions are found to be substantially different from what has been indicated, promptly and before such conditions are disturbed, notify the Engineer verbally and in writing of such conditions.
- E. Take necessary precautions to prevent damage to any above- or below-ground existing structures. Notify the Engineer of any damaged underground structures and make repairs or replacements before backfilling.
- F. During the progress of construction, it is expected that minor relocations of the work will be necessary. Such relocations shall be made only by direction of the Engineer. If obstructions are encountered during drilling, notify the Engineer verbally and in writing before continuing with the construction in order that the Engineer may make such field revisions as are necessary. If the Contractor shall fail to so notify the Engineer when an obstruction is encountered and shall proceed with the construction despite this interference, he/she shall do so at his/her own risk. The

Contractor shall receive no payment for any footage drilled in an abandoned borehole where relocation has not been directed by the Engineer.

1.9 QUALIFICATIONS

- A. The Contractor responsible for constructing gas wells shall be licensed in the State of Florida as a licensed drilling contractor, employing only competent workers for the execution of this work and all such work shall be performed under the direct supervision of an experienced driller satisfactory to the Engineer.
- B. The driller shall be capable of identifying subsurface conditions and maintaining complete and current logs and daily notes for the gas vent/well completion reports.
- C. The Engineer and Owner may make any other investigations deemed necessary to determine the ability of the Contractor to perform the work and the Contractor shall furnish to the Engineer all such information and data for this purpose as the Engineer may request.
- D. Complete the work described in accordance with applicable portions of the requirements of the Federal, State, or local authorities as well as per 29 CFR 1910, OSHA Standards for Hazardous Waste site workers.
- E. The driller and the installation crew shall be trained and experienced as required by OSHA for hazardous waste site workers.
- F. Furnish a list of all personnel who will be involved in the project and their corresponding qualifications and experience.

1.10 NOTIFICATION

- A. Submit to the Engineer in writing, ten days prior to start of work, the proposed work schedule, including the following:
 - 1. The starting date of the gas extraction well construction.
 - 2. The dates and order of gas extraction well drilling.
 - 3. The completion date of gas extraction well drilling.
 - 4. Any anticipated work interruptions of duration greater than 24 hours with exception of weekends and holidays.
- B. The Contractor shall notify the Engineer in writing, prior to start of work, the number of drilling rigs and personnel to be used on the project. Any change in the number of rigs and personnel shall require written notification of the Engineer, 48 hours prior to the change.
- C. The Contractor shall notify the Engineer 24 hours prior to the start or restart of any gas well drilling activities.
- D. No work shall be performed without completing the notification requirements specified above.

1.11 EXTRACTION WELL ACCEPTANCE CRITERIA

- A. Each gas extraction well shall be approved based on the following criteria, in the opinion of the Engineer:
 - 1. The extraction well is structurally sound in conformance with the Specification.
 - 2. The borehole is drilled plumb and true to line.
- B. All caps, pipes, gravel packs and cap shall be set to the depths shown on the Drawings or as directed by the Engineer.

1.12 HEALTH AND SAFETY PROGRAM

- A. The work to be performed at this site involves, but is not necessarily limited to, the following possible conditions and hazards:
 - 1. Typical subsurface conditions at the landfill may include sand, sludge, compost, rock, municipal refuse and obstructions such as large buried items. Precautions will be necessary to address excavation safety.
 - 2. There is a potential for a health hazard exposure to an explosive atmosphere to occur.
- B. Develop and implement a health and safety plan. The plan shall be consistent with the requirements of the following:
 - 1. OSHA Safety and Health Standards 29 CFR 1910 (General Industry), US Department of Labor, Occupational Safety and Health Administration, 1984. Hereafter referred as "29 CFR 1910." Available by calling 513-533-8236.
 - 2. OSHA Safety and Health Standards 29 CFR 1926/1910 (Construction Industry), US Department of Labor, Occupational Safety and Health Administration, 1985. Hereafter referred to as "CFR 1926/1910."
 - 3. Standard Operating Safety Guidelines, US Environmental Response Branch, Hazardous Response Support Division, Office of Emergency and Remedial Response, November 1984. Hereafter referred to as "EPA Guidelines."
- C. The plan shall include but not necessarily be limited to, the following components, as appropriate:
 - 1. Characterization and Evaluation.
 - 2. Safe Work Practices.
 - 3. Engineering Safeguards.
 - 4. Medical Surveillance.
 - 5. Environmental and Personnel Monitoring.
 - 6. Personnel Protective Equipment.
 - 7. Training.
 - 8. Standard Operating Procedures.
 - 9. Control and Decontamination.
 - 10. Emergency and Contingency Planning.
 - 11. Logs and Reports.
 - 12. Hazard Communication Reports.
 - 13. Material Handling and Disposal.
 - 14. Sanitation.
 - 15. Excavation.

- D. Determination of the appropriate level of worker safety equipment and procedures shall be the responsibility of the Contractor as a result of initial site survey, review of existing data and continued safety and health monitoring program performed in accordance with the requirements specified herein.
- E. The plan shall be approved by signature of a designated representative of the Contracting firm, stating that the plan is in compliance with 29 CFR 1910 and 29 CFR 1926/1910. The signed plan shall be furnished to the Owner and Engineer prior to commencing site work activities as evidence of compliance.
- F. Should the Contractor seek relief from, or substitution for, any portion or provision of the plan, such relief or substitution shall be at the sole risk of the Contractor and shall be preceded by notification of the Engineer in writing. The requested modification shall not be implemented until receipt of notification of change is confirmed in writing by the Engineer.
- G. Should the Contractor modify any portion or provision of the plan, notify the Engineer in writing of such modifications.
- H. Any disregard for the provision of these Health and Safety requirements shall be deemed just and sufficient cause for termination of the Contract without compromise or prejudice to the rights of the Contractor.

1.13 TRAINING

- A. The Contractor shall be required to certify that all of their personnel performing site activity that may require an upgrade to respiratory protection, have received appropriate safety training in accordance with 29 CFR 1910.134 provided by the Contractor. Documentation of such training shall be submitted to the Engineer before any employees will be allowed to work.
- B. Instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury.
- C. All employees required to enter into a confined or enclosed space shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken and in the use of protective and emergency equipment required. Comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.
- D. Additionally, the Contractor shall be responsible for and shall guarantee that, personnel not successfully completing the required training are not permitted to perform work that required upgrade to respiratory protection.

1.14 MEDICAL SURVEILLANCE

- A. Persons shall not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The respirator user's medical status shall be reviewed annually.

1.15 PERSONAL PROTECTIVE EQUIPMENT

- A. Furnish all onsite personnel with appropriate personal safety equipment and protective clothing and ensure that all safety equipment and protective clothing is kept clean and well maintained. Protocols formally changing the level of protection shall be described in the health and safety plan. In addition, the following items shall be addressed:
1. All prescription eyeglasses in use on the site shall be safety glasses. Prescription lens inserts shall be provided for full face respirators.
 2. Footwear used onsite shall be steel-toed, steel shank safety shoes or boots.
 3. A written respiratory protection program addressing site-specific respiratory usage shall be developed and submitted to the Engineer. Programs for respiratory protection shall conform to 29 CFR 1910.134.
 4. All onsite personnel shall wear a hard hat when engaging in construction or drilling activities.
 5. All personal protective equipment work onsite shall be decontaminated or properly disposed of at the end of the workday.
 6. Each respirator shall be individually assigned and not interchanged between workers without cleaning and sanitizing. A procedure for assuring periodic cleaning and maintenance shall be furnished and addressed in the health and safety plan.

1.16 PERSONAL HYGIENE AND DECONTAMINATION

- A. A discussion of personnel decontamination protocols to be followed by site workers shall be submitted as part of the health and safety plan. In addition, the following conditions and procedures shall be followed:
1. Smoking and chewing shall be prohibited except in a designated Contractor provided smoking area.
 2. Eating and drinking shall be prohibited except in a designated Contractor provided lunch or break area.
 3. All outerwear shall be removed prior to entering lunch area or smoking area and prior to cleansing hands.
 4. Contractor personnel shall be required to thoroughly cleanse their hands and other exposed areas before entering the smoking or lunch areas.

1.17 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

- A. Develop contingency plans including evacuation procedures and routes to places of refuge or safe distances from the danger area, for the following potential emergencies: chemical exposure, personal injury, potential or actual fire or explosion, environmental accident (spill or release). In the event of any emergency, without delay: take diligent action to remove or otherwise minimize the cause of the emergency; alert the Engineer and Owner whatever measures might be necessary to prevent any repetition of the conditions or actions leading to, or resulting in, the emergency.
- B. Emergency medical care services shall be prearranged at a nearby medical facility with established emergency routes. The staff at the facility shall be advised of the potential medical emergencies that might result.

- C. Establish emergency communications with health and emergency services. The name of this facility, name of contact, emergency routes and emergency communications arrangement shall be provided in the health and safety plan. In addition, furnish the following equipment:
 - 1. At least one first aid kit shall be provided and maintained fully stocked at a first aid station which is in proximity to the work.
 - 2. 2A-10 B: C type dry chemical fire extinguisher shall be provided at the site office.
- D. Should any unforeseen or safety-related factor, hazard, or condition become evident during the performance of work at this site, it shall be the Contractor's responsibility to bring such to the attention of the Engineer both verbally and in writing as quickly as possible, for resolution. In the interim, take prudent action to establish and maintain safe working conditions and to safeguard employees, the public and the environment in accordance with the Health and Safety Plan.
- E. Should the Contractor seek relief from, or substitution for, any portion or provision of the plan, such relief or substitution shall be requested of the Engineer in writing. The requested modification will not be implemented until authorized in writing by the Engineer.
- F. Should the Contractor modify any portion or provision of the plan, notify the Engineer in writing of such modifications.
- G. Any disregard for the provision of these Health and Safety requirements shall be deemed just and sufficient cause for termination of the Contract without compromise or prejudice to the rights of the Contractor.

PART 2 - PRODUCT

2.1 PIPE CASING

A. PVC Pipe:

- 1. All gas/well casings shall be new, solid wall, Schedule 80, flush coupled, square threaded, UV-resistant, PVC pipe in accordance with ASTM D1784 and ASTM D1785 and as manufactured by Celanese Piping Systems, Chemical Division; Cabot Company or equal. Casing shall have nominal diameter as shown on the Drawings.
- 2. Fittings shall be flush coupled, square threaded, UV-resistant as designated in ASTM, D2467 or D2466, as shown on the Drawings and as designated in ASTM D2464 and shall be compatible with the pipe where installed.
- 3. Pipe shall be furnished slotted, as shown on the Drawings and as specified below, in the locations shown. Each pipe length shall be marked with the manufacturer's name or trademark, size, material code and pressure class.
- 4. Guided and/or lag bolted couplings/pipe joints shall not be used.
- 5. All pipe ends shall be saw cut square and true, perpendicular to the pipe length. Pipe shall be cut only at the top and bottom of the well casing.

2.2 SLOTTED PIPE

A. Gas Vent Screen:

1. Slots shall be cut into the pipe at the factory after manufacture. The slotted pipe shall have six rows of horizontally cut 0.080 slots on 1/4-inch centers along the length of the pipe. All slots shall be factory cut before shipment of the pipe to the site. No onsite pipe slotting will be allowed.

2.3 STONE PACK

- A. A stone pack shall be used around the slotted pipe as shown on the drawings. The stone pack material shall be double washed Rounded River Rock or double washed crushed granite with a minimum diameter of 1/2-inch and a maximum diameter of 2 inches. The stone pack shall be placed around and below the pipe and will vary in length as dependent on each gas vent's/well's completion. The material should be free of roots, trash, and other deleterious material.

2.4 FILL MATERIAL

- A. The fill material shall consist of common fill as specified in Section 02220.

2.5 SAND, BENTONITE, AND SAND/BENTONITE MIXTURE

- A. Bentonite shall be granular bentonite as manufactured by Federal Bentonite; Baroid Benseal or equal. Bentonite pellets shall not be used as a substitute material.
- B. The sand shall be natural, classified as noncontaminated, free of roots, trash and other deleterious material and shall have passed through a No.16 sieve.
- C. The sand/bentonite mixture shall be a blend of one-part sand to one-part granular bentonite, mixed dry and hydrated immediately prior to placement in the annular space. The slump range for sand/bentonite mixture shall be 1-2-inch. For each sand/bentonite mixture batch mixed, a slump test shall be performed.

2.6 CAPS

- A. The bottom of each gas well casing shall be fitted with a Schedule 80 PVC cap as shown on the Drawings. The cap shall be glued and lag bolted using four lag bolts to the end of the well casing pipe. Lag bolts shall be 3/8-inch diameter, type 304 stainless steel, full threaded, hex head lag bolts. The lag bolts shall protrude into the interior of the well casing pipe a minimum of 1/2-inch and a maximum of 3/4-inch. Lag bolts shall be installed in 5/16-inch predrilled holes.

PART 3 - EXECUTION

3.1 WELL PIPE INSTALLATION

- A. The 6-inch diameter well pipe shall be secured approximately 12 inches above the bottom of the borehole to allow the stone pack to form beneath the slots as shown on the Drawings. The slots shall extend to within 1-ft of the bottom of the well casing.

- B. Fittings shall be flush coupled and square threaded. All joints shall be completely screwed together with no gaps. The use of cement, glue, and/or lag bolts shall not be permitted; except on the bottom cap as specified above..
- C. Every effort shall be made on the part of the Contractor to assure pipe plumbness and centralization. The Contractor shall use spacers at the slotted section of the well to assure the pipe is maintained within the center of the borehole. The Engineer shall approve the spacer design prior to its use.
- D. The installation of pipe shall be strictly in accordance with the manufacturer's technical data and printed instructions.

3.2 BOREHOLE DRILLING

- A. A 36-inch diameter borehole shall be drilled at each site for a landfill gas extraction well to a depth as shown on the Drawings. The depth of the well borehole shall be deemed as the depth of the well.
- B. Drill the boreholes for the landfill gas extraction wells using an open bucket auger method. Material removed from this landfill as a result of borehole drilling shall be moved and disposed of at the landfill by the Contractor as directed by Engineer.

3.3 STONE PACK, COMMON FILL AND SAND/BENTONITE INSTALLATION

- A. All stone pack installation shall be performed in the presence of the Engineer. The stone pack shall be installed in the annular space by a method approved by the Engineer which will avoid bridging. The stone pack shall be installed from the base of the borehole to a depth above the perforated portion of the casing as shown on the drawings.
- B. A circular section of 8-ounce filter fabric cut to 48 inches in diameter with a central 6-inch hole shall be slipped over the well casing and installed over the top of the stone pack. This fabric shall be tamped firmly onto the top of the stone pack.
- C. Common fill shall be placed and compacted over the filter fabric to a depth as shown on the drawings.
- D. The sand and bentonite mixture shall be installed on top of the common fill, to a depth as shown on the Drawing, in the presence of the Engineer. The sand and bentonite shall be thoroughly dry mixed sand then thoroughly hydrated prior to placement. The installation shall be by a method approved by the Engineer. The sand/bentonite mixture shall be placed from the top of the common fill to existing grade with the total depth as shown on the drawings. The sand and bentonite mixture shall be permitted to dry for at least one hour after installation before any material is placed over it.
- E. All installation of stone pack, fill material and sand/bentonite shall be performed in the presence of the Engineer. Any material that is not placed in the presence of the Engineer shall be removed and reinstalled in the presence of and at the direction of the Engineer.

3.4 GAS EXTRACTION WELL ABANDONMENT

- A. If the Contractor fails to meet the Gas Well Acceptance Criteria as stated in Paragraph 1.12 above, or abandons the gas well because of loss of tools, collapse, or other causes related to well construction operations, Contractor shall abandon the gas well. Under these conditions, the Contractor shall receive no payment for time, materials, or work for abandonment and shall receive no compensation for the abandoned gas well and shall replace the abandoned gas well at the unit prices bid on Bid Form.
- B. Notify the Engineer immediately if any obstruction is encountered during drilling for a gas well. If directed by the Engineer to abandon a borehole, fill the borehole with common fill, or another gravel approved by the Engineer to a depth which is within 10-ft of the top of the landfill at the site. Fill in remaining upper borehole internal with a sand/bentonite mixture approved by the Engineer.
- C. If borehole abandonment is directed by the Engineer, the Contractor shall be paid for footage drilled at the abandoned borehole.

3.5 PROTECTION AND SITE CLEAN-UP

- A. At all times during the progress of the site work, use all reasonable precautions to prevent either tampering with the landfill gas wells or the entrance of foreign material.
- B. All landfill gas extraction well boreholes shall be protected by the provision of temporary supports, covers, or other means of protection approved by the Engineer. The Contractor shall replace any landfill gas well which is damaged by construction operations at the Contractor's expense.
- C. Immediately upon completion of site work, remove all of the equipment, materials and supplies from the site of the work, remove all surplus materials and debris, fill in all holes or excavations and restore any disturbed areas to their original condition. Properly dispose of the refuse and material removed from the borehole.

3.6 START-UP OF LANDFIL GAS FACILITIES

- A. Complete start-up prior to requesting Substantial Completion. The Owner's landfill gas system operator will perform the start-up of the entire landfill gas system. Start-up will take place after field testing has been completed. The Contractor shall cooperate with the Owner's operator during the startup period and shall correct any construction problems which are identified.
- B. General Requirements:
 - 1. Field acceptance tests shall be witnessed by the Owner and Engineer.
 - 2. All performance tests and inspections shall be scheduled at least 10 working days in advance or as otherwise specified with the Owner and Engineer. All performance tests and inspections shall be conducted during the normal week of Monday through Friday, unless otherwise specified.

3. The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither nor make any claim for damage which may occur to equipment prior to the time when the Owner takes over the operation thereof.

C. Preparation for Start-up:

1. All mechanical testing equipment shall be checked to ensure that it is in good working order and properly connected. All systems shall be purged as required. All manholes and pipelines which are hydraulically checked shall be drained and returned to their original condition once the water testing is complete.
2. No testing or equipment operation shall take place until it has been verified by the Engineer that all specified safety equipment has been installed and is in good working order.

D. Field Tests:

1. Field tests shall be made to confirm compliance with the contract and to establish compliance with the technical provision. All piping and equipment shall be tested in the field in the presence of the Engineer or his authorized assistant, in the manner prescribed in the Sections of these Specifications pertaining to such installation. It is the Contractor's responsibility to coordinate with other contractors in the testing and acceptance of pipelines that cross contract boundaries.
2. Discharge piping, fittings, valves, connectors, etc. for the condensate force main shall be pressure tested to 50 psi using water.
3. Startup and Initial System Balancing:
 - a. The Owner's operator will place the blower/flare system into operation drawing landfill gas from the landfill gas system. The blower will be checked for proper rotation and operation, the flare will be checked for repetitive ignition, safety shutdown and proper operation. These activities will occur simultaneously with the blower/flare system manufacturer's system checkout.
 - b. After the blower/flare system has been placed into operation, the Owner's operator will traverse the landfill gas collection system and balance the well field for uniform vacuum throughout the system. The balancing will include recording vacuum levels, as well as performance of a field gas analysis at each well.

END OF SECTION 335133

SECTION 400564 - LANDFILL GAS WELLHEADS VALVES AND APPURTENANCES

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 requirements regarding furnishing all labor, materials, equipment, appurtenances, and incidentals required to supply and install valves and landfill gas wellheads complete and ready for operation and test all valves specified herein.
- B. Related Requirements:
 - 1. Section 312050 "Earthwork for Solid Waste."
 - 2. Section 310529 "High Density Polyethylene Pipe For Landfill Gas Collection System."
 - 3. Section 432514 "Pneumatic Pump System."

1.3 SUBMITTALS

- A. Submit to the Engineer a list of materials to be furnished, the names of the suppliers and the date of delivery of materials on the job site.
- B. Submit the following documentation to the Engineer for approval of the gas wellheads prior to construction:
 - 1. Manufacturer's installation instructions.
 - 2. Manufacturer's flow calibration data sheets.
 - 3. An isometric drawing showing the dimensions and components of the wellhead and adapters where applicable.
 - 4. Manufacturer's Operation and Maintenance (O&M) Manual.
 - 5. Manufacturer's warranty information.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Plastic Butterfly Valves:
 - 1. Butterfly valves shall be of the wafer type.
 - 2. Body of valve shall be PVC; disc shall be polypropylene.
 - 3. Valve seat and seals shall be EPDM.

4. Seat shall extend over inner surface plus outside face of body to form self-gasketing feature.
5. Valve shall be suitable for use in landfill gas system.
6. Valves shall be as manufactured by Asahi/America, Type 57 Gear Operated, Type 75; or equal.
7. Extension tube and stem shall be 304 stainless steel.
8. Disc and stem seal shall be of double "O" ring type and be made of same material as valve seat.
9. Spacers at butterfly valves shall be as recommended by the valve and/or piping manufacturer to prevent interference between the valve disc and the interior of the piping. Spacers shall be fabricated or molded of the same type of HDPE as used in the piping. Spacers shall be provided on both sides of each valve and gaskets shall be used on both sides of each spacer. Pipe bevels will not be acceptable.

B. Plastic Gate Valves:

1. Heavy duty overlapping bonnet style PVC gate valves with EPDM O-Ring and threaded ends rated 200 psi @ 73 degrees F.
2. Body of valve shall be high impact PVC and the plug shall be polypropylene.
3. Valves shall be suitable for use in landfill gas system.
4. Valves shall be non-rising stem, Spears non-shock PVCI, or equal.
5. Stem shall be made of high impact PVC.
6. Disc and stem seal shall be double O-ring, EPDM.

C. Plastic Ball Valves:

1. Valves shall be true union PVC ball valves.
2. Ball valves shall be of the socket (ANSI) type of the true union design which permits installation or repair without expanding the pipeline.
3. Body of valve shall be PVC.
4. Valve seats shall be PTFE with EPDM O-ring backing cushions to provide bubble tight closure. Valves shall be capable of blocking in two directions, upstream and downstream, leaving full pressure or vacuum on the opposite end of the valve.
5. Valves shall be suitable for use in a landfill gas system.
6. Valves shall be Spears True Union Ball Valves, Hayward Safe Block True Union, Asahi/America Type 21/21A true union or equal.
7. Stem shall be made of PVC.
8. Seals shall be of PTFE with double EPDM O-ring backing cushions.

D. Wellhead Pipe Material and Fittings:

1. The landfill gas collection system wellheads shall consist of well head piping, flow control gate valve or needle valve, gas temperature gauge, quick connect gas sampling ports, flex connector, and dust caps. Wellhead shall have a removable orifice plate. Wellhead piping and fittings shall be Schedule 80 PVC. Adapters shall be Schedule 40 PVC. The wellhead shall be Model ORP215M (2-inch) as manufactured by QED Environmental Systems Inc. or approved equal. The equipment shall be capable of withstanding the rigors of landfill gas recovery application including internal high vacuum, weathering, gas constituent and ultraviolet light exposure. The wellhead shall be tight and leak free and shall be height adjustable in the field using adapter bushings. Equipment supplied under this Section shall

- have a proven performance of not less than five years in actual landfill service. The wellhead assembly shall be supplied as a complete manufactured unit.
2. PVC piping used in the manufacture and installation of the wellhead shall meet the requirements of ASTM D1785 for Schedule 40, 80, and 120 PVC pipe.
 3. PVC fittings used in the manufacture and installation of the wellhead shall meet the requirements of ASTM D2467 for PVC socket-type fittings.
 4. PVC joint connections shall meet the requirements of ASTM D2855 for solvent cemented PVC joints.
- E. Wellhead Valve Material:
1. Material used to manufacture the flow control valve body shall meet the requirements of ASTM D1784 for rigid PVC compounds.
- F. Wellhead Measurement Tube:
1. The measurement tube shall be 2-inch Schedule 80 PVC pipe, and shall fit concentrically into the well casing through a field adjustable sliding compression fitting, manufactured by QED Environmental Systems Inc., or equal.
 2. The measurement tube shall be of sufficient length to allow gas to achieve a uniform velocity profile before being measured.
- G. Wellhead Orifice Plate:
1. Orifice plate shall be replaceable, mounted between two sides of a PVC union that shall be capable of opening by hand.
 2. Each wellhead shall be supplied with a set of different sized quick-change orifice plates, including 1-inch (installed), 3/4-inch, and 1/2-inch bore. Each set of spare plates shall be packed in a heavy-duty zipper lock plastic bag.
 3. Orifice plate bores shall be sharp edge orifice plates.
- H. Wellhead Fittings:
1. PVC fittings shall be Schedule 80 socket fittings. Adapters shall be Schedule 40 PVC.
 2. An elastomeric PVC flexible coupling (Fernco 1056-66 or equal) with stainless steel shear ring (Fernco PROFLEX Coupling assembly or equal) shall be used to clamp the sliding compression fitting bushing to the top of the well.
- I. Wellhead Temperature Gauge:
1. The temperature gauge shall have a stainless steel probe and hermetically sealed watertight dial cover. It shall be threaded to the wellhead. One temperature gauge shall be supplied for each wellhead. Temperature gauge dial shall be 2-inch diameter, marked in 20-200-degree Fahrenheit scale with Celsius equivalent scale.
- J. Wellhead Sample Ports:
1. Sample ports shall be 304 stainless steel 1/4-inch barb with black polypropylene cap. Alternate port material should be submitted to the engineer.
 2. Five spares of each type port and caps used shall be supplied.

K. Wellhead Flex Connector Hose:

1. Flex connector hose shall be constructed of a high-quality polyurethane film. They shall be resistant to UV and ozone and be high abrasion, tear, and puncture resistant.
2. The connectors shall remain flexible over a full temperature range of minus 60 degrees F to 200 degrees F and have a bend radius of approximately 1.25 times the diameter. They shall be a minimum of 48 inches in length. Connectors shall be Fernco PROFLEX couplings with stainless steel shear rings or equal.
3. Connectors shall be firmly clamped to adjacent piping with a band clamp fabricated with a 304-stainless steel band, screw, and screw retainer.

L. Each wellhead shall be installed through a sliding compression adapter as manufactured by QED Environmental Systems Inc. or approved equal. The adapter shall consist of a gasketed slip joint with compression nut and a rigid PVC bushing to match the well casing size. Each adapter shall be attached to the well casing through the use of a Fernco elastomeric coupling with a stainless steel shear ring. The coupling shall be attached with stainless steel band clamps. Reducing elastomeric couplings and/or straight couplings with reducing “donuts” will not be acceptable. Each adapter shall be suitable for installation of a wellhead and shall have suitable connectors or adapters to allow installation of well dewatering pumps as specified herein.

M. Nuts, Bolts, Washers and Gaskets:

1. All bolted connections shall be made with UNC bolts and matching nuts with minimum projection of threads through the nut equal to the nut thickness. All connections shall be made with flat washers under both the bolt heads and the nuts.
2. All nuts shall be installed using a torque wrench and shall be torqued to manufacturer’s recommended values. Any components damaged due to over-torquing nuts shall be immediately removed from the site and replaced with new components. No component repairs will be allowed.
3. For above ground installation, nuts, bolts, and washers shall be cadmium plated or galvanized steel. For below ground application, nuts, bolts, and washers shall be type 304 stainless steel.
4. All nuts and bolts shall be installed with a heavy coating of Never Seez, anti-seize compound on all threaded surfaces.
5. Gasket for flange and valve spacer installation shall be EPDM or red silicone, 1/8-inch-thick, covering the entire sealing surface.

2.2 PERFORMANCE SPECIFICATIONS

A. Volumetric Flow Rating:

1. The nominal flow capacity of each wellhead shall be a minimum of 1 scfm and a maximum of 30 scfm.
2. The range of design flows, as compared to pressure drop across the orifice plate, shall be presented in graphic and tabular form and copies of this information shall be supplied with each wellhead.

B. Accuracy:

1. The orifice plate assembly shall be pre-calibrated and lab-certified. The measurement device shall have an accuracy and repeatability of 5 percent through the recommended flow range when used and maintained in accordance with the Manufacturer's instructions and recommendations.
- C. Pressure Design Ratings:
1. All wellhead components and connections shall be designed to withstand a vacuum of 29.8 inches of mercury.

PART 3 - EXECUTION

3.1 WELLHEAD INSTALLATION

- A. The wellhead shall be handled according to written instructions supplied by the manufacturer.
- B. The wellhead shall be installed such that the measurement tube assembly is concentric with the well casing if supplied alone in a well. The wellhead shall be installed such that the measurement tube assembly is eccentric with the well casing if supplied with an installed well pump. In both installation types, the wellhead shall be plumb and secure.
- C. Where the wellhead connects directly to the collection header, a branch fitting ("Tee" or "Wye") shall be installed on the header in accordance with accepted methods and standards appropriate for the header material. The wellhead shall be connected to the header branch fitting in accordance with the manufacturer's written instructions. Adapters shall be used as recommended by the manufacturer.
- D. The wellhead shall be installed on the well casing in accordance with the manufacturer's written instructions.
- E. Where a flex connection is used, the flex connection shall be installed in accordance with the manufacturer's written instructions. A stainless steel hose clamp must be used on both ends of the flex connection and a stainless steel shear ring shall encircle the body of the flex connection.

3.2 TESTING

- A. Testing of valves shall be in conjunction with testing of the landfill gas header and collection system per Section 310529. Operation shall be satisfactory to the Engineer in all respects.
- B. After installing the wellhead, the following minimum tests shall be performed:
 1. Test orifice plate for unobstructed flow and accuracy of readings.
 2. Test valve by opening and closing three times. Valve shall seal bubble tight.

END OF SECTION 400564

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SECTION 432514 - PNEUMATIC PUMP SYSTEM

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 requirements regarding the furnishing and installation of pumps as shown on the drawings for use in a landfill gas collection system to remove accumulated condensate from the vertical landfill gas extraction wells.

1.3 SUBMITTALS

- A. Submit, in accordance with Section 013300, and within 30 calendar days from the Notice to Proceed, the following information:
 - 1. Manufacturer qualifications.
 - 2. Product data for selected model(s), including physical dimensions, weight, rated flow range and air consumption specifications, materials of construction, general specifications, accessories, and warranty coverage.

1.4 QUALITY ASSURANCE

- A. The manufacturer shall have a minimum of 25 years' experience providing automatic controllerless pneumatic pump designs in landfill gas well applications. Proof of this experience must be submitted in accordance with Section 013300.
- B. The manufacturer's standard published warranty shall cover 100 percent of material and workmanship for a minimum of five full years from date of shipment, with no pro-rated period of coverage.
- C. The manufacturer shall have a local factory-trained agent (located within 300 miles of the site) and shall have a factory-trained OSHA certified technician available for installation or site assistance.
- D. The manufacturer shall maintain a toll-free service and troubleshooting telephone line, operating 24 hours/day, 365 days/year.
- E. The manufacturer must be capable of shipping all standard equipment within ten (10) working days of receipt of order.

- F. The manufacturer's pump shall have a detailed Operation & Maintenance manual, which shall be submitted in accordance with Section 017823.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. A pneumatic displacement pump alternately fills and discharges. During the fill cycle, the pump chamber is vented to atmosphere and liquid fills the pump through the inlet check valve under hydrostatic pressure. During the discharge cycle, air pressure is applied to the pump chamber, which closes the inlet check valve and displaces the liquid within the pump through the discharge check valve and discharge tubing.
- B. In an automatic controllerless pneumatic displacement pump, cycling between the fill and discharge cycles is controlled by an internal float that rises and falls with the liquid level inside the pump. At the top of the float travel, the internal air valve mechanism is actuated to apply air pressure. When the liquid is fully discharged from the pump chamber, the float reaches the bottom of its travel, which closes the air supply to the pump and opens the air exhaust line, venting the pressurized air and allowing the pump to fill again. The pump only cycles when there is sufficient liquid in the well to raise the float above the pump actuation point.
- C. The maximum drawdown level in the well is determined by the pump position and its actuation point. The maximum flow rate of the pump is determined by the pump depth, submergence (liquid head above pump inlet), and the air pressure and volume supplied to the pump.

2.2 MATERIALS

- A. General:
1. The pump(s) shall be a controllerless pneumatic displacement design, AutoPump Model AP4+Long Bottom Inlet, manufactured by QED Environmental Systems, Inc. or approved equal.
 2. Pump design and performance shall meet the following requirements and must be able to operate under the following conditions:
 - a. Temperature up to 180-degree F (82-degree C).
 - b. Air pressures up to 120 psi (8.4 kg/cm²).
 - c. Free floating or dissolved common fuels (diesel, gasoline, JP1-JP6, #2 heating oils).
 - d. pH range 4 – 9.
 - e. BTEX (Benzene, Toluene, Ethyl Benzene, Xylene) and MTBE.
 - f. Landfill liquids – leachate and condensate.
- B. Equipment Design Requirements:
1. Standard product design shall include complete pump assembly, including casing, end caps, tubing/hose fittings, O-rings, check valves, inlet, and float/actuator assembly, to meet the following specifications:

- a. The pump and all related components at the well shall operate on compressed air. No electricity shall be required at the well head.
 - b. Pumps shall have integral on/off level control; no bubbler tubes or in-well sensors shall be required to provide on/off level control.
 - c. Pump system shall be controllerless, requiring no surface-mounted controllers, in-line control devices, or factory-set control cycle timers within or external to the pump.
 - d. Pumps shall be supplied as bottom inlet but shall also be available in both top and bottom inlet versions. Manufacturer shall stock Inlet Conversion Kits that allow field conversions from top to bottom inlet or vice versa.
 - e. Pumps shall be designed and constructed to allow disassembly of all major pump components in as little as two minutes using only a nut driver or socket wrench to remove the pump inlet bolts, allowing for quick, field cleaning and maintenance. The internal float mechanism shall be removable using only standard pliers to release the lower actuator rod stop.
 - f. Pumps shall be designed and constructed to fit in a minimum 4-inch IPS well casing, with a minimum required submergence of 26.7-inch.
2. Pump casing shall be Fiberglass Reinforced Plastic to eliminate denting and corrosion, and to withstand temperatures to 180-degree F (82-degree C):
- a. Pump casing shall not be unfinished standard pipe stock. Casing ends shall be machined to assure precise fit of end cap O-rings for proper seal and easy disassembly and reassembly without O-ring damage. The entire ID of the pump casing shall be precision worked for a smoother surface to reduce accumulation of mineral scale.
 - b. For ease of pump disassembly, the intake and head O-rings shall be located no farther than 0.187-inch from the ends of the pump casing.
 - c. The fluid inlet check valve shall be a poppet type and the discharge check valve shall be a rotating ball. Valves shall exhibit a self-cleaning action and be able to pass coarse solids and viscous liquids without clogging. The inlet and discharge check balls shall be located in a housing that allows passage of solids up to 1/8-inch diameter. The fluid discharge shall have a ball-type check valve that is affixed above the casing of the pump and is serviceable using hand tools. No flapping or sliding valves shall be allowed.
 - d. Pump head and frame shall be constructed of 304 stainless steel.
 - e. Pumps shall have a 3-inch intake screen constructed of 316 stainless steel with holes rather than slots for fluid to pass.
 - f. The fluid intake check valve seat shall be constructed of 304 stainless steel.
 - g. The discharge tube shall be a minimum of 1-inch 304 stainless steel to maximize flow rate and reduce clogging/fouling.
 - h. All non-metallic internal components of the pump shall be constructed of PVDF for maximum strength at elevated temperatures, and chemical resistance.
 - i. Air and liquid fittings shall be available in sizes to accommodate either tubing or hose.
 - j. Internal floats shall have proven performance and compatibility with landfill leachate and condensate at elevated temperatures.
 - k. Pumps shall be designed such that the pump casing can be removed by removing four bolts.
 - l. Stainless steel castings shall be incorporated into the pump intake assembly to reduce the number of components needed.

- m. Air intake and exhaust seats shall not be machined into the pump head. The seats shall be separate components so that they can be replaced without necessitating replacement of the entire pump head.
 - n. Pump weight shall be less than 17 lbs. to facilitate removal from wells.
3. Each pump shall be supplied with a flange cap, which secures the pump tubing or hose and supports the pump in the sump, to meet the following specifications:
 - a. Flange caps shall be machined to assure proper fit on standard flange adapters. Cap sizes shall be available to fit 6-inch standard flange.
 - b. Caps shall support a supplied pressure regulator/air filter assembly.
4. Pumps shall be equipped with air and liquid tubing to meet the following specifications:
 - a. Tubing shall be constructed of a material that will not swell in water, provides excellent resistance to hydrocarbons, fuels, and alkalis, and is rated for temperatures to 180-degree F (82-degree C.)
 - b. Multiple-tube assemblies shall be jacketed in a continuous Nylon 12 sheath to prevent hang-ups, loops, and kinks during installation or removal. Loose or cable-tied tubing is not allowed.
 - c. Each pump shall be supplied with a 30-foot continuous length of all tubing. The tubing shall be multiple tube assemblies.
 - d. Each pump shall be supplied with a 30-foot continuous length of 1/8-inch stainless steel cable. A complete set of attachment hardware shall be supplied.
5. Supplied accessories shall include the following:
 - a. Cycle counters shall be provided for each pump to allow monitoring of pump operation, and fluid flow.
 - b. A filter/regulator kit shall be provided for each pump, attaching to the flange cap(s), comprised of a 5-micron final air filter with autodrain to remove moisture and a pressure regulator to allow air pressure adjustment.
 - c. "Lever action" flange clamps (instead of nuts and bolts) to eliminate the need for wrenches, prevent corrosion/galling of bolts, and to significantly reduce the time required for flange removal. Shall be supplied for each pump.
 - d. Leachate-compatible quick-release pump fittings made of 316 stainless steel with Hastelloy C retaining clips and dual Viton O-ring seals to allow quick disconnection and reconnection of tubing/hose without the need to shorten pump tubing/hose length or remove and replace tubing clamps. Shall be supplied for each pump.
6. All pumps shall be installed in the landfill gas extraction wells as shown on the drawings:
 - a. All materials used in pump installation shall be supplied by the pump manufacturer.
 - b. All pumps shall be installed in accordance with the pump manufacturer requirements.

C. Operation and Performance Parameters:

1. Manufacturer shall have published flow curves to validate pump flow rate specifications. These flow curves shall be provided in accordance with Section 013300.

2. Each pump shall deliver flow up to 14 GPM at a depth of 20 feet with 10 feet of submergence, when equipped with 1-inch discharge fittings and tubing and operating at 100 psi.
3. Pumps shall have a lift of at least 250 feet.
4. Pumps shall function properly over an operating pressure range of 5 to 120 psi.
5. Pumps shall automatically conserve air by operating only when the liquid level in the well is high enough for pumping to occur based on the pump location in the well and the pump's specified actuation point.
6. Pump design shall prevent air from entering discharge tubing or hose under normal operating conditions.
7. Pumps shall be capable of operation in wells under pressure or vacuum without requiring any pump modifications.

PART 3 - EXECUTION (NOT USED)

END OF SECTION 432514

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6706-250111
November 2020

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