Contract Documents and Technical Specifications

for the

New Hanover County Secure Landfill
Landfill Gas Collection and Control System
Construction
Request for Bid No. 18-0197

New Hanover County
230 Government Center Drive
Wilmington, North Carolina 28403

Prepared by:

SCS ENGINEERS, PC
2520 Whitehall Park Drive, Suite 450
Charlotte, North Carolina 28273
(704) 504-3107
NC Corp. License No. C-1837

Seal
Albert D. Glenn, PE

3/30/2018
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INVITATION FOR BIDS

LANDFILL GAS COLLECTION AND CONTROL SYSTEM
CONSTRUCTION

NEW HANOVER COUNTY ENVIRONMENTAL MANAGEMENT

RFB # 18-0197

COUNTY COMMISSIONERS

WOODY WHITE, CHAIRMAN
SKIP WATKINS, VICE-CHAIRMAN
JONATHAN BARFIELD, JR.
PATRICIA KUSEK
ROB ZAPPLE

CHRIS COUDRIET, COUNTY MANAGER
SECTION 001116
INVITATION FOR BIDS

NEW HANOVER COUNTY
INVITATION TO SUBMIT PROPOSAL FOR
LANDFILL GAS COLLECTION AND CONTROL SYSTEM CONSTRUCTION

RFB # 18-0197

Sealed bids addressed to Kim Roane, Business Officer, New Hanover County Environmental Department, 3002 U.S. Highway 421 North, Wilmington, North Carolina 28401 and marked “Landfill Gas Collection and Control System Construction - RFB # 18-0197” will be accepted until 2:00 P.M. EST, May 15, 2018.

Instructions for submitting bids, bid documents, and complete requirements and information may be obtained by visiting the County’s website http://www.nhcgov.com/business-nhc/bids/. All prime bidders on this project must be pre-qualified in accordance with New Hanover County’s Pre-qualification Ordinance, in order to bid. Bids will not be opened unless the bidder is pre-qualified. Pre-qualification applications may be obtained at the County Legal Department, 230 Government Center Drive, Suite 155, Wilmington, N.C. 28403 or by visiting the County’s website.

A mandatory pre-bid meeting will be held on April 17, 2018 at 2:00 p.m. The meeting will be held at the New Hanover County Environmental Management Department Conference Room, 3002 U.S. Highway 421 North, Wilmington, North Carolina 28401.

This project includes providing the equipment and construction of a landfill gas (LFG) collection and control system at the New Hanover County Landfill. This includes providing and installation of landfill gas (LFG) blower and flare equipment, air compressor, high density polyethylene (HDPE) piping, connection to existing LFG extraction wells, and pneumatic pumps.

Each bid must be accompanied by a Bid Bond made payable to New Hanover County, for an amount equal to 5% of the total base bid price as a guarantee that, if the bid is accepted, the required Agreement will be executed and that a 100% Performance Bond and 100% Payment Bond will be furnished.

Bidders must be licensed contractors in the State of North Carolina at the time bid are submitted. Pursuant to N.C.G.S. S87-15, it will be necessary for contractors to show evidence of such license in the bid document.

This Invitation to Bid is being used to solicit responses from suitably qualified, experienced and licensed contractors to qualify for services related to the construction of the landfill gas collection and control system in New Hanover County, North Carolina.

Contractor will be required to comply with OSHA and all federal, state and local laws,
ordinances, rules and regulations that in any way affect the Work and will be required to review/endorse the County’s Contractor Compliance Requirements in Section 004300.05. Bidders will be required to submit a Qualification Questionnaire located in Section 004113.01 as part of their bid to demonstrate qualifications to perform the Work.

The bidder shall make good faith efforts, as defined in the bid specifications, to subcontract 10% of the dollar value of the single prime contract to businesses owned and controlled by minorities. Individuals who are rebuttably presumed to be minorities include women, Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, and Asian-Indian Americans. Bidders are required to submit, along with the bid, information concerning minority business enterprises which will participate in the contract. The information will include: (1) name and address of each minority firm; (2) description of the work to be performed by each minority firm named; and (3) the dollar value of the work to be performed by each firm named. Bidders are required to submit along with the bid, specific documentation demonstrating that they made good faith efforts to meet established goals. A bid which fails to meet these requirements may be considered non-responsive. Contact Lena Butler at Lbutter@nhegov.com concerning questions related to this issue.

New Hanover County reserves the right to accept or reject any or all bids and to make the purchase which will be in the best interest of the County.

Posted: __________, 2018
SECTION 002113

INSTRUCTIONS TO BIDDERS

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ARTICLE 2 - QUALIFICATIONS OF BIDDERS

2.1 Bidders must be licensed contractor in the State of North Carolina at the time proposals are submitted.

2.2 The firm or corporation bidding must demonstrate contracting experience in projects that include landfill gas collection and control systems equipment and installation. Bidders are to provide a list of project references (minimum of 5) that will be contacted concerning the noted experience, quality of work, timeliness of completion of project(s), and efficiency of administrative processes. Complete and provide Contractor Qualification Questionnaire with Bid Proposal.

2.3 To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit, following receipt of written request by COUNTY, information including, but not limited to, financial data, previous experience, including additional references and evidence of authority to conduct business in the jurisdiction where the Project is located.
This information must be received by COUNTY within ten days of Bidder receiving the written request. Submittals requested pursuant to this paragraph are in addition to those required elsewhere.

2.4 The Bidder must include in the bid submittal documentation from the major material suppliers (blower skid, flare, pneumatic pumps, HDPE piping, etc.) that the prime or subcontractor responsible for paying the supplier for the material is not in arrears on payments for purchases of materials on other projects.

ARTICLE 3 - PREPARATION OF BID PROPOSAL

3.1 **Completion of Bid Form:** Bidders are directed to submit their bid on the bid proposal form contained in this bid package. Bidders are instructed to submit the original along with one (1) electronic copy on either a CD or a flash drive. All prices and notations shall be written in ink or typed. Discrepancies between words and numerals will be resolved in favor of words. Discrepancies between the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Changes or corrections made on the Bid must be initialed by the individual signing the bid. No corrections will be permitted once bids have been received and opened. No telephone, electronic or facsimile proposals will be considered. Proposals received after the time and date for closing will not be considered. **BIDS NOT SIGNED WILL BE REJECTED.**

3.2 **Bid Proposal Form Attachments:** The following shall be included with the bid proposal:

1. 5% Bid Security.
2. Contractor Qualification Questionnaire (Specification Section 004113.01).
3. Non-Collusion Affidavit (Specification Section 004113.02).
4. Statement of Assurance (Specification Section 004113.03).
5. New Hanover County Minority and/or Women Business Enterprise Construction Guidelines and Affidavits (Specification Section 004113.04).

3.3 **Deviations:** New Hanover County reserves the right to allow or disallow minor deviations or technicalities should the County deem it to be to the best interest of the County. New Hanover County shall be the sole judge of what is to be considered a minor deviation or technicality.

3.4 **Warranties:** Bidder warrants that all goods furnished shall be free from all defects, and shall conform in all respects to the technical specifications established by the County. If the County's specifications include a statement of the particular purpose for which the goods will be used, the goods offered by bidder shall be fit for this purpose.

3.5 **Communications:** After the bid issue date, all communications between the County and prospective bidders regarding this bid request shall be in writing. Any inquiries, requests for interpretation, technical questions, clarification, or additional information shall be directed to:
Bidders may not have communications, verbal or otherwise, concerning this RFB with any personnel or boards from New Hanover County. If any bidder attempts or completes any unauthorized communication, the County will reject the Bidder’s bid.

Questions and responses affecting the specifications of the bid will be provided by issuance of an Addendum. All questions shall be received no later than 2:00 PM, EST, April 24, 2018.

Questions will be answered via a written addendum to be issued no later than 2:00 PM, EST, May 1, 2018.

ARTICLE 4 - SUBMISSION OF SEALED BID PROPOSAL

Submit one (1) original and one (1) electronic copy of the bid on either a CD or flash drive in a sealed envelope properly marked “Landfill Gas Collection and Control System Construction - RFB # 18-0197” and addressed to:

New Hanover County Environmental Management Department
Attn: Kim Roane, Business Officer
3002 U.S. Highway 421 North
Wilmington, North Carolina 28401

Each Bid must be accompanied by Bid security made payable without condition to Owner in an amount of 5 percent of Bidder's maximum Bid and in the form of a Bid Bond issued by a surety company qualified to do business under the laws of the State of North Carolina and satisfactory to the Owner.

The Bid security of the Successful Bidder will be retained until such Bidder has executed the Agreement, 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 to furnish the required contract security within the number of days set forth in the Bid Form, Owner may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Agreement or the day after the last day the Bids remain subject to acceptance as set forth in the Bid Form, whereupon Bid security furnished by such Bidders will be returned.
Bid security of other Bidders who Owner believes do not have a reasonable chance of receiving the award will be returned within 7 days after the Bid opening.

ARTICLE 5 - COST OF PREPARATION OF RESPONSE

Costs incurred by prospective Bidders in the preparation of the response to this Request for Bid are the responsibility of the responding Bidder and will not be reimbursed by the County.

ARTICLE 6 - EXECUTION OF AGREEMENT

The successful Bidder will be required to enter into a formal agreement that is consistent with the bid package outlined within. The Bidder to whom the Contract is awarded by County shall within 15 days after notice of award and receipt of Agreement forms from the County, sign and deliver to the County all required copies of said Agreement. (Sample of Agreement in draft form is included in bid packet - specifics may change to comply with bid specifications) and obtain the Performance Bond and Payment Bond, each in the sum of the full amount of the Contract Price.

ARTICLE 7 - TRADE SECRET CONFIDENTIALITY

All bid proposals received and recorded at the bid opening are considered public record and available for public inspection. According to General Statutes 132 - 1.2, trade secrets contained in a bid may be kept confidential if the bidder, at the time the bid is submitted, designates the secret and requests that it be kept confidential. This right of privacy will be construed as narrowly as possible to protect the interests of the BIDDER while attempting to maximize the availability of information to the public.

ARTICLE 8 - DEADLINE FOR RECEIPT OF BIDS

The deadline for receipt of bids is May 15, 2018 at 2:00 PM EST. Bids will be opened promptly and read aloud in the Conference Room located at the New Hanover County Environmental Management Department; 3002 U.S. Highway 421 North, Wilmington, North Carolina 28401. Bidders or their authorized agents are invited to be present. Any bids received after the scheduled closing time for the receipt of bids will be rejected.

ARTICLE 9 - WITHDRAWAL OF BIDS

A bidder submitting a bid for construction or repair work or for the purchase of apparatus, supplies, materials, or equipment may withdraw the bid from consideration after the bid opening without forfeiture of his bid security if the price bid was based upon a mistake, which constituted a substantial error, provided the bid was submitted in good faith, and the bidder submits credible evidence that the mistake was clerical in nature as opposed to a judgment error, and was actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of work, labor, apparatus, supplies, materials, equipment, or services made directly in the compilation of the bid, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn
from inspection of the original work papers, documents or materials used in the preparation of the bid sought to be withdrawn.

A request to withdraw a bid must be made in writing to the County prior to the award of the contract, but not later than 72 hours after the opening of bids. If the work or purchase is rebid, under no circumstances may the bidder who has filed a request to withdraw be permitted to rebid the work or purchase.

ARTICLE 10 - AUTHORIZED SIGNATURE

Please be advised that the person signing the bid must be authorized by your organization to contractually bind your firm with regard to prices and related contractual obligations for the delivery and installation period requested. **BIDS NOT SIGNED WILL BE REJECTED.**

ARTICLE 11 - TAXES

New Hanover County is exempt from and will not pay Federal Excise Taxes or Transportation Taxes. The County is not exempt from Sales and Use Taxes. If bidder is required to charge North Carolina sales tax on bidder's sales, bidder shall not include it as part of the bid price. The County will pay North Carolina sales tax over and above bid prices when invoiced.

ARTICLE 12 - RESPONSIBILITY OF COMPLIANCE WITH LEGAL REQUIREMENTS

The bidder's products, service and facilities shall be in full compliance with any and all applicable state, federal, local, environmental and safety laws, regulations, ordinances and standards or any standards adopted by nationally recognized testing facilities regardless of whether or not they are referred to in the bid documents.

ARTICLE 13 - E-VERIFY

Pursuant to S.L. 2017-294, Contractor shall fully comply with the U.S. Department of Homeland Security employee legal status E-Verify requirements for itself and all its subcontractors. Violation of the provision, unless timely cured, shall constitute a breach of Contract.

ARTICLE 14 - CONDITION OF AWARD

The award of any contract resulting from this bid will be made to the lowest responsible bidder, taking into consideration quality, performance and time specified in the bid for the performance of the contract. The term responsibility implies skill, judgment and integrity necessary to the faithful performance of the contract, as well as sufficient financial resources and ability.

ARTICLE 15 - EQUAL OPPORTUNITY

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to Equal Employment Opportunity for all
persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the Secretary of Labor, are incorporated herein. The Contractors agree not to discriminate against any employees or applicant for employment because of physical or mental handicap in regard to any position for which the employees or applicant is qualified. The Contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices.

ARTICLE 16 - MINORITY PARTICIPATION

New Hanover County invites and encourages participation in this Request for Bids by businesses owned by minorities, women, disabled, disabled business enterprises and non-profit work centers for the blind and severely disabled.

ARTICLE 17 - INDEMNITY

Successful Bidder shall indemnify and hold the County, its agents and employees, harmless against any and all claims, demands, causes of action, or other liability, including attorney fees, on account of personal injuries or death or on account of property damages arising out of or relating to the work to be performed by the Successful Bidder hereunder, resulting from the negligence of or the willful act or omission of the Successful Bidder, his agents, employees and subcontractors.

ARTICLE 18 - INSURANCE

Before commencing any work or services, Contractor shall procure insurance in Contractor’s name and maintain all insurance policies for the duration of the Contract of the types and in the amounts listed in this Contract. The insurance shall provide coverage against claims for injuries to persons or damages to property which may arise from operations or in connection with the performance of the work hereunder by Contractor, its agents, representatives, employees, or subcontractors, whether such operations by itself or anyone directly or indirectly employed by it.

18.1 **Workers Compensation and Employers Liability Insurance:** Bidder shall maintain Worker’s Compensation as required by the General Statutes of the State of North Carolina and Employer’s Liability Insurance.

The Employer’s Liability, and if necessary, Commercial Umbrella Liability (CUL) insurance shall not be less than $1,000,000 each accident for bodily injury by accident, $1,000,000 each employee for bodily injury by disease, and $1,000,000 policy limit.

The insurer shall agree to waive all rights of subrogation against County, its officers, officials, agents, and employees for losses arising from services performed by Contractor for County.
18.2 **Commercial General Liability:** Bidder shall maintain Commercial General Liability (CGL) and if necessary, Commercial Umbrella Liability (CUL) insurance with a total limit of not less than $5,000,000 each occurrence for bodily injury and property damage. If such CGL insurance contains a general aggregate limit, it shall apply separately to this project/location or the general aggregate shall be twice the required limit.

CGL insurance shall be written on Insurance Services Office (ISO) “occurrence” form CG 00 01 covering CGL or its equivalent and shall cover the liability arising from premises, operations, independent contractors, products-completed operations, personal and advertising injury, and liability assumed under an insured contract, including the tort liability of another assumed in a business contract.

County, its officers, officials, agents, and employees are to be covered as additional insureds under the CGL by endorsement CG 20 26 or an endorsement providing equivalent coverage as respects to liability arising out of activities performed by or on behalf of Bidder; products and completed operations of Bidder; premises owned, leased or used by Bidder; and under the CUL, if any. The coverage shall contain no special limitations on the scope of protection afforded to County, its officers, officials, agents, and employees.

Bidder’s CGL insurance shall be primary as respects County, its officers, officials, agents, and employees. Any other insurance or self-insurance maintained by County, its officers, officials, agents, and employees shall be in excess of and shall not contribute to Bidder’s insurance.

18.3 **Automobile Liability Insurance:** Bidder shall maintain Business or Personal Auto Liability and, if necessary, CUL insurance with a limit of not less than $1,000,000 each accident.

Such insurance shall cover liability arising out of any auto, including owned, hired, and non-owned autos used in performance of services.

Business Auto coverage shall be written on ISO form CA 00 01, or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage equivalent to that provided in ISO form CA 00 01.

Bidder’s Business Auto Liability insurance shall be primary as respects County, its officers, officials, agents, and employees. Any other insurance or self-insurance maintained by County, its officers, officials, agents, and employees shall be in excess of and shall not contribute to Contractor’s insurance.

**ARTICLE 19 - PAYMENT AND PERFORMANCE BONDS**

The Bidder to whom the contract is awarded will be required to execute the Agreement and obtain the Performance Bond and Payment Bond, each in the sum of the full amount of the
Contract Price.

The Bonds must be duly executed and acknowledged by the Bidder as principal and by a corporate surety company qualified to do business under the laws of the State of North Carolina and satisfactory to the Owner as surety, for the faithful performance of the Contract and payment for labor and materials. The premiums for such Bonds shall be paid by the Contractor. Each Bond must be valid for two (2) years beyond the date of final acceptance of the project.

ARTICLE 20 - ADDENDUM

Should a Bidder find discrepancies or ambiguities in, or omissions from, the Drawings or Specifications, or should he be in doubt as to their meaning, notify the ENGINEER (SCS Engineers, PC, Attn: Albert Glenn, P.E.; 2520 Whitehall Park Drive, Suite 450; Charlotte, NC 28273; Phone: 704-504-3107; Email: aglenn@scsengineers.com)

20.1 No oral interpretations will be made to any Bidder as to the meaning of the Contract Documents. All such changes or interpretations will be made in writing in the form of an addendum and, if issued, will be mailed or sent by available means to all known prospective Bidders. Each prospective Bidder shall acknowledge receipt of such addenda in the space provided therefor in the Bid Form. In case any Bidder fails to acknowledge receipt of such addenda or addendum, his Bid will nevertheless be construed as though it had been received and acknowledged and the submission of his Bid will constitute acknowledgment of the receipt of same. All addenda are a part of the Contract Documents and each Bidder will be bound by such addenda, whether or not received by him. It is the responsibility of each prospective Bidder to verify that he has received all addenda issued before Bids are opened.

ARTICLE 21 - COMPLIANCE WITH BID REQUIREMENTS

Failure to comply with these provisions or any other provisions of the General Statutes of North Carolina will result in rejection of bid.

ARTICLE 22 - SUCCESSFUL BIDDER

The successful bidder who is not currently set up as a vendor in County’s vendor file will be required to submit a completed W-9 and EFT form in order to be entered into the County’s vendor database. Instructions will be provided upon bid award.

ARTICLE 23 - CONTRACTOR SAFETY REQUIREMENTS

23.1 Contractor shall comply with all local, state and federal safety rules and regulations and shall sign and return NHC Environmental Management Contractor Compliance Requirements document (to be attached to the Agreement).
23.2 The Contractor shall be solely responsible for maintaining safety at all work sites. The Contractor shall take all reasonable steps to insure safety for both workers and visitors to include traffic control.

23.3 The Contractor shall comply with all NC Department of Transportation requirements including, but not limited to, placards and training.

ARTICLE 24 – RIGHT OF REJECTION

New Hanover County reserves the right to accept or reject any or all bids and to make the purchase which will be in the best interest of the County.
SECTION 004113

BID FORM

RFB # 18-0197
LANDFILL GAS COLLECTION AND CONTROL SYSTEM
CONSTRUCTION

Deadline for Receipt of Bids: 2:00 p.m. EST, May 15, 2018

Project: Landfill Gas Collection and Control System Construction
New Hanover County Landfill located at 5210 US-421,
Wilmington, North Carolina 28402

Delivered To: New Hanover County Environmental Management Department
3002 U.S. Highway 421 North
Wilmington, North Carolina 28401

Date Submitted: ................................………………………………...............

Submitted by: ................................………………………………...............
(full name)

(full address) ................................………………………………...............

................................………………………………...............

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 Bidding Documents to perform all
Work as specified or indicated in the Bidding Documents for the prices and within the
times indicated in this Bid and in accordance with the other terms and conditions of the
Bidding Documents.

2. Bid must be accompanied by a Bid Bond duly executed by the Bidder as principal issued
by a surety company qualified to do business under the laws of the State of North
Carolina and satisfactory to the Owner, in an amount not less than five (5) percent of the
total Bid amount.

3. Bidder accepts all of the terms and conditions of the Invitation to Bid and the Instructions
to Bidders, including without limitation those dealing with the disposition of Bid security.
This Bid will remain subject to acceptance for 90 days after the day of Bid opening, or
for such longer period of time that Bidder may agree to in writing upon request of Owner.
Bidder will sign and submit the Agreement with the Bonds and other documents required
by the Bidding Documents within 15 days after the date of Owner's Notice of Award.
4. In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents and the following Addenda receipt of all which is hereby acknowledged.

Addendum # ……… Dated ……………  Addendum # ……… Dated ……………
Addendum # ……… Dated ……………  Addendum # ……… Dated ……………

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Article 5 of the General Conditions, and reports and drawings of a Hazardous Environmental Condition, if any, which has been identified in the Supplementary Conditions as provided in Paragraph 5.06 of the General Conditions

E. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid or performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work indicated in the Bidding Documents.

H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in
the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.

I. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

5. Bidder further represents that this Bid is genuine and is not made in the interest of or on behalf of any undisclosed individual or entity 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 individual or entity to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

6. Bidder agrees that the Work will be complete and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within two hundred and thirty (230) calendar days, after the commencement of Contract Times as defined in the General Conditions.

7. Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified above.

8. The terms used in this Bid have the meaning indicated in the Instructions to Bidders, Supplementary Conditions, and the General Conditions.

9. Bidder will complete the Work for the Unit Prices as listed on the attached Base Bid Schedule.

A. The line items described in the Base Bid Schedule include approximate quantities as estimated by the Engineer. The estimated quantities for unit price items of work are not guaranteed and may increase or decrease. If increases or decreases in these quantities occur, the Contract price is to be adjusted by a Change Order reflecting Unit Prices as bid and revised quantities as they occur. The Base Bid Schedule outlines each Bid item and the corresponding Unit Price and Extended Total Price Bid by the Contractor.

B. The Base Bid Schedule must be completely filled out, including a Unit Price for all items.
C. Bidder hereby agrees to perform and complete all Work as described in the Specifications and as shown on the Drawings of these Contract Documents for the Unit Bid Prices as listed in the Base Bid Schedule.

D. The Bid prices for scheduled items shall include all costs including requirements of the General Requirements – Division 1; equipment suppliers overhead and profit; and the Contractor’s overhead and profit. No direct or separate payment will be made beyond those indicated in the Base Bid Schedule.

E. Bidder acknowledges that final payment will be based upon the actual installed quantity(ies) and Unit Prices and any approved additions or deductions based on the Base Bid Schedule.

10. Communications concerning this Bid shall be sent to Bidder at the following address:

..................................................................................................................

..................................................................................................................

..................................................................................................................

11. The New Hanover County Government reserves the right to accept or reject any and all bids as it deems in its best interest.

THIS AREA HAS BEEN LEFT BLANK INTENTIONALLY
SIGNATURE OF BIDDER

Contractor’s License Number: .................................

License Expiration Date: .................................

If an Individual:

By .................................................................

.................................................................

(signature of individual)

Doing Business As .................................................................

Business Address .................................................................

.................................................................

Phone Number .................................................................

Date .................................................................

If a Partnership:

By .................................................................

.................................................................

(firm name)

.................................................................

(signature of general partner)

Business Address .................................................................

.................................................................

Phone Number .................................................................

Date .................................................................

If a Corporation:

By .................................................................

.................................................................

(corporation name)

.................................................................

(signature of authorized person)

.................................................................

(title)
Business Address .................................................................
.................................................................................................
.................................................................................................
Phone Number ...........................................................................
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Date ..............................................................................................
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If a Joint Venture (Other Party must sign below):

If an Individual:

By .................................................................
.................................................................................................
(signature of individual)

Doing Business As .................................................................
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Business Address .................................................................
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Phone Number ...........................................................................
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Date ..............................................................................................
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If a Partnership:

By .................................................................
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(firm name)
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(signature of general partner)
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If a Corporation:

By ..........................................................................................................................
(corporation name)

..........................................................................................................................
(signature of authorized person)

..........................................................................................................................
(title)

Business Address ...............................................................................................

..........................................................................................................................

Phone Number .................................................................................................

Date .....................................................................................................................

END OF DOCUMENT
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization and Demobilization</td>
</tr>
<tr>
<td>2</td>
<td>Bonds and Insurance</td>
</tr>
<tr>
<td>3</td>
<td>Electrical</td>
</tr>
<tr>
<td>4</td>
<td>Landfill Gas Blower Skid and Flare</td>
</tr>
<tr>
<td>4A</td>
<td>Supply and Delivery of Landfill Gas Blower Skid and Flare Equipment</td>
</tr>
<tr>
<td>4B</td>
<td>Installation of Landfill Gas Blower Skid and Flare Equipment</td>
</tr>
<tr>
<td>4C</td>
<td>Site Work, Equipment Concrete Slabs, and Gravel Paving</td>
</tr>
<tr>
<td>4D</td>
<td>3-days of Start-Up, Testing, and Training</td>
</tr>
<tr>
<td>4E</td>
<td>Landfill Gas Blower Skid and Flare Equipment 2-Year Warranty</td>
</tr>
<tr>
<td>4F</td>
<td>Landfill Gas Blower Skid and Flare Equipment 5-Year Service and Maintenance</td>
</tr>
<tr>
<td>5</td>
<td>Air Compressor</td>
</tr>
<tr>
<td>5A</td>
<td>Rotary Screw Air Compressor with 120-gallon Receiver Tank Supply, Delivery, and Installation</td>
</tr>
<tr>
<td>5B</td>
<td>Pre-Fabricated Painted Metal Building (14 ft. x 12 ft. x 7 ft.) and Concrete Slab</td>
</tr>
</tbody>
</table>
### Landfill Gas Collection and Control System Construction

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
<th>Estimated Quantity</th>
<th>Unit Price</th>
<th>Extended Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6</strong></td>
<td>Landfill Gas Collection Piping and Fittings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6A</td>
<td>6-inch Diameter HDPE SDR-17 Pipe</td>
<td>LF</td>
<td>4,536</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6B</td>
<td>8-inch Diameter HDPE SDR-17 Pipe</td>
<td>LF</td>
<td>476</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6C</td>
<td>12-inch Diameter HDPE SDR-26 Pipe</td>
<td>LF</td>
<td>3,481</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6D</td>
<td>18-inch Diameter HDPE SDR-26 Pipe</td>
<td>LF</td>
<td>1,020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6E</td>
<td>8-inch Diameter LFG Pipe Access Risers</td>
<td>LF</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6F</td>
<td>6-inch (SDR-17) Tie-in to Leachate Clean-outs</td>
<td>EA</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6G</td>
<td>Corrugated Metal Pipe for LFG Pipe Casing</td>
<td>LF</td>
<td>161</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| <strong>7</strong>    | Landfill Gas Liquids Management Air and Forcemain Piping and Fittings |      |                    |            |                     |
| 7A       | 2-inch Diameter SDR 9 Air Pipe and Fittings | LF   | 9,330              |            |                     |
| 7B       | 4-inch (SDR-11) by 8-inch (SDR-17) Dual Containment Forcemain Pipe and Fittings | LF   | 4,910              |            |                     |
| 7C       | 3-inch (SDR-11) by 6-inch (SDR-17) Dual Containment Forcemain Pipe and Fittings | LF   | 250                |            |                     |
| 7D       | 4-inch (SDR-11) Single Wall Forcemain Pipe and Fittings | LF   | 390                |            |                     |
| 7E       | 3-inch (SDR-11) Single Wall Forcemain Pipe and Fittings | LF   | 3,769              |            |                     |</p>
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
<th>Estimated Quantity</th>
<th>Unit Price</th>
<th>Extended Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>7F</td>
<td>Connect New Forcemain to Existing Pump Station</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7G</td>
<td>Forcemain Vault</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7H</td>
<td>Dual Containment Forcemain Pipe Cleanout</td>
<td>EA</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Valves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8A</td>
<td>6-inch Landfill Gas Valve Assembly</td>
<td>EA</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8B</td>
<td>8-inch Landfill Gas Valve Assembly</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8C</td>
<td>12-inch Landfill Gas Valve Assembly</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8D</td>
<td>18-inch Landfill Gas Valve Assembly</td>
<td>EA</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8E</td>
<td>2-Inch Air Isolation and Blow-off Valve Assembly</td>
<td>EA</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8F</td>
<td>2-Inch Air Termination Valve Assembly</td>
<td>EA</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8G</td>
<td>4-inch Forcemain Isolation Valve Assembly</td>
<td>EA</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8H</td>
<td>4-inch Forcemain Termination Valve Assembly</td>
<td>EA</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Condensate Sump including Pneumatic Pump</td>
<td>EA</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>LFG Extraction Well Pneumatic Pump including Dual Extraction Well Cap, Hosing, and Fittings</td>
<td>EA</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Landfill Gas Collection and Control System Construction

### Item No. Description

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
<th>Estimated Quantity</th>
<th>Unit Price</th>
<th>Extended Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Landfill Gas Extraction Well Connection to Collection Piping, Includes New Wellhead</td>
<td>EA</td>
<td>20</td>
<td></td>
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<tr>
<td>12</td>
<td>Connection to Ventilation Risers</td>
<td>EA</td>
<td>7</td>
<td></td>
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<tr>
<td>13</td>
<td>Remote Wellhead</td>
<td>EA</td>
<td>9</td>
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<tr>
<td>14</td>
<td>Restoration</td>
<td>LS</td>
<td>1</td>
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<tr>
<td>15</td>
<td>Surveying and Record Drawings</td>
<td>LS</td>
<td>1</td>
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</table>

### Subtotal Price

Subtotal Price $ 

Contingency at 10 percent of Subtotal $ 

Total Base Bid Price $

### TOTAL BASE BID

(in words)

($) 

(in figures)
SECTION 004113.01
CONTRACTOR QUALIFICATION QUESTIONNAIRE
(MUST BE SUBMITTED WITH THE BID)

1. Company Name ________________________________________________
   Address ______________________________________________________
   Phone _______________________________________________________
   Fax __________________________________________________________
   North Carolina Licensed Contractor Number ________________________
   Contact/Representative _________________________________________
   Title _________________________________________________________
   Names and Titles of Officers
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   Name and Address of Corporate Owner, Partner, or Affiliate, if applicable
   _____________________________________________________________
   _____________________________________________________________

2. Check as appropriate:
   ___ Corporation in State of ________________ on __________ (date)
   ___ Partnership
   ___ Sole Proprietor

3. How many years has your company been in business as a General Contractor? __________
   ____________________________________________________________________
4. Have you completed construction projects that included the installation of landfill gas blower and flare system before?

_____ Y    _____ N

5. Have you completed construction projects that included the installation of landfill gas collection piping systems before?

_____ Y    _____ N

a. If yes, provide the following information for up to five (5) projects in the past ten (10) years.

b. If no, complete the following for five (5) related construction projects.

<table>
<thead>
<tr>
<th></th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
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</thead>
<tbody>
<tr>
<td>Project Name</td>
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<tr>
<td>Location (City / County, State)</td>
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<tr>
<td>Owner</td>
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<td>Address</td>
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<td>Phone</td>
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<td></td>
</tr>
<tr>
<td>Contact</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Engineer</td>
<td></td>
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<tr>
<td>Address</td>
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<td>Contact</td>
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<tr>
<td>Project Type</td>
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<tr>
<td>Project Size (i.e. Blower Skid, Flare, Piping, etc.)</td>
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<td>Start Date</td>
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<td>Completion Date</td>
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<tr>
<td>Construction Cost</td>
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</tbody>
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<thead>
<tr>
<th>Project Name</th>
<th>Project Type</th>
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<td>Project 4</td>
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<td></td>
<td>Project 5</td>
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<table>
<thead>
<tr>
<th>Location (City / County, State)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner Address</td>
</tr>
<tr>
<td>Phone Contact</td>
</tr>
<tr>
<td>Engineer Address</td>
</tr>
<tr>
<td>Phone Contact</td>
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<td>Project Type</td>
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<tr>
<td>Project Size (i.e. Blower Skid, Flare, Piping, etc.)</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Start Date</td>
</tr>
<tr>
<td>Completion Date</td>
</tr>
<tr>
<td>Construction Cost</td>
</tr>
</tbody>
</table>

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

   ____________________________________________
   ____________________________________________
   ____________________________________________

7. Have you ever been involved in litigation involving your work on a construction project? If so, where and why? Also, what was the outcome?

   ____________________________________________
   ____________________________________________
   ____________________________________________

8. Are you able to provide the Performance and Payment Bonds?
   
   _____ Y       _____ N

9. Will you subcontract any part of this work? If so, describe which portions and the subcontractor.

   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________
10. Who will provide the required insurance for your Subcontractors?
   ___ Your firm (insurance certificates required)
   ___ Your Subcontractors (insurance certificates required)

11. What blower skid and flare manufacturer do you intend on purchasing for this project?

12. What air compressor manufacturer do you intend on purchasing for this project?

SIGNATURE OF BIDDER

By: .........................................................................................................................
   (Print Individual, Corporation, or LLC’s full name)

By: .........................................................................................................................
   (Signature of Individual, Pres./V.P. for Corp., or G.P./Manager for LLC)

Date: ...............................................................

Business Address: .........................................................……………………………………
   .........................................................……………………………………
   .........................................................……………………………………

Phone Number: ............................................   Fax Number: ................................................

Corporate Seal

Attest: ............................................................  Date: ............................................................

END OF SECTION
SECTION 004113.02

NON-COLLUSION AFFIDAVIT
AND OF NONINTEREST OF COUNTY EMPLOYEES
(MUST BE SUBMITTED WITH THE BID)

STATE OF NORTH CAROLINA

COUNTY OF NEW HANOVER

__________________________________, being first duly swore deposes and says that he (it) is the bidder in the above bid, that the only person or persons interested in this bid are named therein; that no officer, employee or agent of New Hanover County, or of any other bidder, is interested in this bid, and that affiant makes this bid with no past or present collusion with any other person, firm, or corporation.

__________________________________ Affiant

STATE OF ________________

COUNTY OF ________________

The foregoing instrument was acknowledged before me this ____________ by ____________________________

(Date)

(Name of Officer or agent, title of officer or agent)

of ____________________________, a ____________________________, corporation, on behalf of the corporation. He/she is personally known to me or has produced ________________________________

(State of place of incorporation)

(Type of identification)

as identification and did take an oath.

______________________________ Notary Public, Commission No.__________

______________________________ (Name of Notary typed, printed or stamped)

(SEAL ABOVE)

END OF SECTION
SECTION 004113.03

STATEMENT OF ASSURANCE
NEW HANOVER COUNTY
RFB NO. 18-0197
LANDFILL GAS COLLECTION AND CONTROL SYSTEM CONSTRUCTION
(MUST BE SUBMITTED WITH THE BID)

The undersigned, as bidder certifies that the General Conditions and Instructions to Bidders, the Scope of Work and the Price Sheet/Bid Form found in the bidding documents have been read and understood.

The bidder hereby provides assurance that the firm represented in this bid, as indicated below:

1) Will comply with all requirements, stipulations, terms, and conditions as stated in the bid document:
2) Currently complies with all applicable State and Federal Laws:
3) Is not guilty of collusion with the vendors possibly interested in this bid or in determining prices to be submitted: and
4) Such agent as indicated below is officially authorized to represent the firm in whose name this bid is submitted.

<table>
<thead>
<tr>
<th>Name of Firm</th>
<th>Name of Firm Representative</th>
</tr>
</thead>
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SECTION 004113.04

New Hanover County
Minority and/or Women Business Enterprise
(M/WBE) Program

Construction Guidelines and Affidavits

These instructions shall be included with each bid solicitation.
New Hanover County
Minority and/or Women Business Enterprise Program

Construction Guidelines for M/WBE Participants

Policy Statement
It is the policy of New Hanover County that minority businesses, as defined by North Carolina General Statute 143-128 have maximum opportunity to participate in the performance of contracts and subcontracts funded in whole or in part with public funds. This includes all aspects of the County’s contracting and procurement programs, including but not limited to construction projects, supplies and materials, as well as professional and personal service contracts.

Goals and Good Faith Efforts
Bidders responding to this solicitation shall comply with the M/WBE program by making Good Faith Efforts to achieve the following aspiration goals for participation.

| M/WBE | 10% |

Bidders shall submit M/WBE information with their bids on the forms provided. This information will be subject to verification by the County prior to contract award. Firms qualifying as “M/WBE” for the County’s goals must be certified by the NC Department of Historically Underutilized Businesses (NCHUB) or by the NC Department of Transportation (NCDOT). Firms qualifying as “WBE” must be designated as “women-owned business and firms qualifying as “MBE” must be certified in one of the other categories (i.e.: Black, Hispanic, Asian American, American Indian, Disabled, or Socially and Economically Disadvantaged). Those firms who are certified as both a “WBE” and “MBE” may only satisfy the “MBE” requirement. A complete database of NC HUB certified firms may be found at http://www.doa.nc.gov/hub/default.aspx and NCDOT firms may be found at https://partner.ncdot.gov/VendorDirectory/default.html.

Please note: A contractor may utilize any firm desired; however, in order for the County to count the participation towards the goal, all M/WBE vendors who wish to do business as a minority or female must be certified by NC HUB or NCDOT.

The Bidder shall make good faith efforts to encourage participation of M/WBEs prior to submission of bids in order to be considered as a responsive bidder. Bidders are cautioned that even though their submittal indicates they will meet the M/WBE goal, they should document their good faith efforts and be prepared to submit this information, if requested.

The M/WBE’s listed by the Contractor on the Identification of Minority/Women Business Participation which are determined by the County to be certified shall perform the work and supply the materials for which they are listed unless the Contractors receive prior authorization from the County to perform the work with other forces or to obtain materials from other sources. If a contractor is proposing to perform all elements of the work with his own forces, he must be prepared to document evidence satisfactory to the owner of similar government contracts where he has self-performed. The Contractor shall enter into and supply copies of fully executed subcontracts with each M/WBE or supply signed Letter(s) of Intent to the Project Manager after award of contract and prior to Notice to Proceed. Any amendments to subcontracts shall be submitted to the Project Manager prior to execution.
Instructions

The Bidder shall provide with the bid the following documentation:

☐ Identification of Minority/Women Business Participation
  (if participation is zero, please mark zero—Blank forms will be considered nonresponsive)

☐ Affidavit A (if subcontracting)

OR

☐ Identification of Minority/Women Business Participation
  (if participation is zero, please mark zero—Blank forms will be considered nonresponsive)

☐ Affidavit B (if self-performing; must attest that bidder does not customarily subcontract work on this type of project—including supplies and materials)

Within 72 hours or 3 business days after notification of being the apparent low bidder who is subcontracting anything must provide the following information:

☐ Affidavit C (if aspirational goals are met or are exceeded)

OR

☐ Affidavit D (if aspirational goals are not met)

After award of contract and prior to issuance of notice to proceed:

☐ Letter(s) of Intent or Executed Contracts

**With each pay request, the prime contractors will submit the Proof of Payment Certification, listing payments made to M/WBE subcontractors.

***If a change is needed in M/WBE Participation, submit a Request to Change M/WBE Participation Form. Good Faith Efforts to substitute with another M/WBE contractor must be demonstrated.

Minimum Compliance Requirements:

All written statements, affidavits, or intentions made by the Bidder shall become a part of the agreement between the Contractor and the County for performance of contracts. Failure to comply with any of these statements, affidavits or intentions or with the minority business guidelines shall constitute a breach of the contract. A finding by the County that any information submitted (either prior to award of the contract or during the performance of the contract) is inaccurate, false, or incomplete, shall also constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the County whether to terminate the contract for breach or not. In determining whether a contractor has made Good Faith Efforts, the COUNTY will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts.
NEW HANOVER COUNTY
Identification of Minority/Women Business Participation

I, ______________________________________________ (Name of Bidder),
do hereby certify that on this project, we will use the following minority/women business enterprises as
construction subcontractors, vendors, suppliers or providers of professional services.

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<th>Work type</th>
<th>*M/WBE Category</th>
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*M/WBE categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I),
Female (F) Socially and Economically Disadvantaged (S) Disabled (D)

If you will not be utilizing M/WBE contractors, please certify by entering zero “0”

The total value of MBE business contracting will be ($) ________________.
The total value of WBE business contracting will be ($) ________________.
NEW HANOVER COUNTY AFFIDAVIT A – Listing of Good Faith Efforts

County of ___________________________ (Name of Bidder)

Affidavit of ____________________________

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

☐ 1 – (10 pts) Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.

☐ 2 – (10 pts) Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.

☐ 3 – (15 pts) Broken down or combined elements of work into economically feasible units to facilitate minority participation.

☐ 4 – (10 pts) Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.

☐ 5 – (10 pts) Attended prebid meetings scheduled by the public owner.

☐ 6 – (20 pts) Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.

☐ 7 – (15 pts) Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.

☐ 8 – (25 pts) Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.

☐ 9 – (20 pts) Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.

☐ 10 - (20 pts) Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority/Women Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority/women business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: __________ Name of Authorized Officer: ____________________________

Signature: ___________________________________________________________

Title: _______________________________________________________________

State of ______________ , County of ________________________________

Subscribed and sworn to before me this ______ day of __________ 20 _____

Notary Public _________________________________

My commission expires ________________________________

SEAL

Page 5
NEW HANOVER COUNTY --AFFIDAVIT B-- Intent to Perform
Contract with Own Workforce.

County of  ______________________

Affidavit of  ______________________ (Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the ______________________ contract.

______________________________ (Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: __________ Name of Authorized Officer: ______________________________

______________________________ Signature: ______________________________

______________________________ Title: ______________________________

State of ________________________, County of ________________________

Subscribed and sworn to before me this ____________ day of _______ 20__

Notary Public ______________________________

My commission expires ______________________________
NEW HANOVER COUNTY - AFFIDAVIT C - Portion of the Work to be Performed by M/WBE Firms

County of ____________________________

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by M/WBE businesses as defined in GS143-128.2(g) and 128.4(a),(b),(c) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive bidder within 72 hours after notification of being low bidder.

Affidavit of ____________________________ I do hereby certify that on the ________ day of ________ _________, ____________

(Name of Bidder) (Project Name)

Project ID# ____________________________ Amount of Bid: $ __________________

I will expend a minimum of ________% of the total dollar amount of the contract with M/WBE firms. Minority/women businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

Attach additional sheets, if needed

<table>
<thead>
<tr>
<th>Name and Phone Number</th>
<th>*M/WBE Category</th>
<th>Work description</th>
<th>Dollar Value</th>
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*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (S) Disabled (D)

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with M/WBE Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: ___________ Name of Authorized Officer: ________________________________

Signature: ________________________________
Title: ______________

State of ____________, County of ________________

Subscribed and sworn to before me this ________ day of ________ 20____

Notary Public ________________________________
My commission expires ________________________
NEW HANOVER COUNTY AFFIDAVIT D — Good Faith Efforts

County of ______________________
(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by minority/women business is not achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of __________________________I do hereby certify that on the
(Name of Bidder)

____________________________________
(Project Name)

Project ID# ___________________________ Amount of Bid $ __________________

I will expend a minimum of _____% of the total dollar amount of the contract with M/WBE firms. Minority/women businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.
(Attach additional sheets if needed)

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<th>Name and Phone Number</th>
<th>*M/WBE Category</th>
<th>Work description</th>
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*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (S) Disabled (D)

Examples of documentation required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.

B. Copies of quotes or responses received from each firm responding to the solicitation.

C. A telephone log of follow-up calls to each firm sent a solicitation.

D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.

E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.

F. Copy of pre-bid roster.
G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.

H. Letter detailing reasons for rejection of minority business due to lack of qualification.

I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with M/WBE Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:__________ Name of Authorized Officer:_______________________________

Signature:_______________________________

Title:_________________________________

State of ____________________, County of ____________________

Subscribed and sworn to before me this ________ day of ________

20____

Notary Public ____________________
My commission expires ________
LETTER OF INTENT
M/WBE Subcontractor Performance

Please submit this form or executed subcontracts with M/WBE firms after award of contract and prior to issuance of notice to proceed.

PROJECT: ____________________________________________________________________

TO: _________________________________________________________________________

The undersigned intends to perform work in connection with the above project as a:

____ Minority Business Enterprise   _____ Women Business Enterprise

The M/WBE status of the undersigned is certified the NC Office of Historically Underutilized Businesses (required). ___ Yes   ___ No

The undersigned is prepared to perform the following described work or provide materials or services in connection with the above project at the following dollar amount:

<table>
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<tr>
<th>Work/Materials/Service Provided</th>
<th>Dollar Amount of Contract</th>
<th>Projected Start Date</th>
<th>Projected End Date</th>
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_______________________________________
(Date)

______________________________________      _____________________________________
(Address)                               (Name & Phone No. of M/WBE Firm)

_______________________________________     ____________________________________
(Name & Title of Authorized Representative of M/WBE)          (Signature of Authorized Representative of M/WBE)
REQUEST TO CHANGE M/WBE PARTICIPATION

(Submit changes only if notified as apparent lowest bidder, continuing through project completion)

Project: ______________________________________________________________________

Bidder or Prime Contractor: ____________________________________________________

Name & Title of Authorized Representative: _______________________________________

Address: ________________________________ Phone #: ___________________________
______________________________________________________________________________ Email Address: ______________________

Total Contract Amount (including approved change orders or amendments): $__________

Name of subcontractor: _________________________________________________________

Goods or services provided:
____________________________________________________________________________

Proposed Action:

___ Replace subcontractor
___ Perform work with own forces

For the above actions, you must provide one of the following reasons (Please check applicable reason):

___ The listed MBE/WBE, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract.

___ The listed MBE/WBE is bankrupt or insolvent.

___ The listed MBE/WBE fails or refuses to perform his/her subcontract or furnish the listed materials.

___ The work performed by the listed subcontractor is unsatisfactory according to industry standards and is not in accordance with the plans and specifications; or the subcontractor is substantially delaying or disrupting the progress of the work.

If replacing subcontractor:
Name of replacement subcontractor: ____________________________

If replacing subcontractor:
Name of replacement subcontractor: ____________________________
The M/WBE status of the contractor is certified by the NC Office of Historically Underutilized Businesses (required). ___Yes  ___No

Dollar amount of original contract $________________

Dollar amount of amended contract $ _______________

Other Proposed Action:

___Increase total dollar amount of work  ___Add additional subcontractor
___Decrease total dollar amount of work   ___Other

Please describe reason for requested action: _______________________________________

____________________________________________________________________________

*Please attach Letter of Intent or executed contract document

Dollar amount of original contract $_______________

Dollar amount of amended contract $ _______________

Interoffice Use Only:

Approval ___Y ___N

Date___________________

Signature_________________
Proof of Payment Certification
M/WBE Contractors, Suppliers, Service Providers

Project Name: ________________________________  Prime Contractor: ________________________________
Current Contract Amount (including change orders): $______________
Requested Payment Amount for this Period: $______________
Is this the final payment? ___Yes   ___No

<table>
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<tr>
<th>Firm Name</th>
<th>M/WBE Category*</th>
<th>Total Amount Paid from this Pay Request</th>
<th>Total Contract Amount (including changes)</th>
<th>Total Amount Remaining</th>
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*Minority categories: Black, African American (B), Hispanic (H), Asian American (A) American Indian (I), Female (F) Socially and Economically Disadvantaged (S) Disabled (D)

Date: ______________________  Certified By: ______________________________

Name

Title

Signature
DIVISION 0

CONTRACT DOCUMENTS

New Hanover County
Landfill Gas Collection and
Control System Construction
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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term’s singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. Addenda—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. Agreement—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. Application for Payment—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. Bid—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. Bidder—The individual or entity who submits a Bid directly to OWNER, as distinct from a sub-bidder who submits a bid directly to a Bidder.

6. Bidding Documents—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. Bidding Requirements—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. Change Order—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract. Extra Work will not be considered for a Change Order or for an adjustment in the Contract Price or the Contract times unless both OWNER and CONTRACTOR execute the document. Furthermore, the parties agree that under no circumstances will an act or failure to act on the part of the OWNER or ENGINEER constitute a waiver of the written Change Order requirement for extra Work.

9. Change Proposal—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. Claim—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer

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concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer’s decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer’s decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. **Constituent of Concern**—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. **Contract**—The entire and integrated written contract between the Owner and Contractor concerning the Work.

13. **Contract Documents**—Those items so designated in the Agreement, and which together comprise the Contract.

14. **Contract Price**—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. **Contract Times**—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. **Contractor**—The individual or entity with which Owner has contracted for performance of the Work. For purposes of giving or receiving notice, directives, change orders, or any other information from the ENGINEER or OWNER to the CONTRACTOR, the CONTRACTOR shall designate one person as Project Manager to receive such notice, directives, change orders, or other information. If the person so identified by the CONTRACTOR is not present on the job site during normal working hours for any consecutive 48-hour period, the CONTRACTOR shall in writing addressed to the ENGINEER and the OWNER identify the individual who is acting as Project Manager.

17. **Cost of the Work**—See Paragraph 13.01 for definition.

18. **Drawings**—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. **Effective Date of the Contract**—The date, indicated in the Agreement, on which the Contract becomes effective.
20. **Engineer**—The individual or entity named as such in the Agreement.

21. **Field Order**—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

22. **Hazardous Environmental Condition**—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

23. **Laws and Regulations; Laws or Regulations**—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. **Liens**—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. **Milestone**—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. **Notice of Award**—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid. Award of a bid by the OWNER’s governing body represents a preliminary determination as to the qualification of the bidder, but no legally binding acceptance of bidder’s offer occurs until the OWNER’S governing body, or its designee, executes a formal Contract with the bidder.

27. **Notice to Proceed**—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

28. **Owner**—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. **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.

30. **Project**—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. **Project Manual**—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. **Resident Project Representative**—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.

33. **Samples**—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

34. **Schedule of Submittals**—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.

35. **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.

36. **Shop Drawings**—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. **Site**—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

38. **Specifications**—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. **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.

40. **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.

41. **Successful Bidder**—The Bidder who’s Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. **Supplementary Conditions**—The part of the Contract that amends or supplements these General Conditions.

43. **Supplier**—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

44. **Technical Data**—Those items expressly identified as Technical Data in the Project Manual, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no
such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. **Underground Facilities**—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

46. **Unit Price Work**—Work to be paid for on the basis of unit prices.

47. **Work**—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. **Work Change Directive**—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

49. **Without Exception**—The term “without exception”, when used in the Contract Documents following the name of a Supplier or a proprietary item or equipment, product, or material, shall mean that the sources of the product are limited to the listed Suppliers or products and that no like, equivalent, or “or-equal” item and no substitution will be permitted.

### 1.02 Terminology

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

**B. Intent of Certain Terms or Adjectives:**

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 Article 10 or any other provision of the Contract Documents.

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

D. Defective:
   1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
      a. does not conform to the Contract Documents; or
      b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
      c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. Furnish, Install, Perform, Provide:
   1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
   2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
   3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
   4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

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.

ARTICLE 2 – PRELIMINARY MATTERS

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

2.02 Copies of Documents

A. Subsequent to the Agreement being signed by the Contractor and Owner, the Owner shall furnish to Contractor up to four (4) printed copies of the Drawings and Project Manual and one fully executed counterpart of the Agreement. Additional printed copies will be furnished upon request at the cost of reproduction.

2.03 Before Starting Construction

A. Preliminary Schedules: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to 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;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 Preconstruction Conference; 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 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, 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 and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 Initial Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing,
scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor’s full responsibility therefor.

2. Contractor’s Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

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

2.06 Electronic Transmittals

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient’s use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 Reference Standards

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in
3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies:

1. Contractor’s Verification of Figures and Field Measurements: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. Contractor’s Review of Contract Documents: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. 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 part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

Effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

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

3.04 Requirements of the Contract Documents

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer’s written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 Reuse of Documents

A. Contractor and its Subcontractors and Suppliers 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 reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner’s express written consent, or violate any copyrights pertaining to such Contract Documents.

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.
ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 Commencement of Contract Times; Notice to Proceed
   A. In no event will the Contract Times commence to run later than the ninetieth day after the
day of bid opening or the thirtieth day after the Effective Date of the Agreement, whichever
date is earlier. If a Notice to Proceed is given, the Contract Times commence on the day
indicated in the Notice to Proceed.

4.02 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 such date.

4.03 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.

4.04 Progress Schedule
   A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph
2.05 as it may be adjusted from time to time as provided below.

   1. Contractor shall submit to Engineer for acceptance (to the extent indicated in
      Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in
      changing the Contract Times.

   2. Proposed adjustments in the Progress Schedule that will change the Contract Times
      shall be submitted in accordance with the requirements of Article 11.

   B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes
      or disagreements with Owner. No Work shall be delayed or postponed pending resolution
      of any disputes or disagreements, or during any appeal process, except as permitted by
      Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 Delays in Contractor’s Progress
   A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or
interferes with the performance or progress of the Work, then Contractor shall be entitled
to an equitable adjustment in the Contract Times and Contract Price. Contractor’s
entitlement to an adjustment of the Contract Times is conditioned on such adjustment
being essential to Contractor’s ability to complete the Work within the Contract Times.

   B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for
delay, disruption, or interference caused by or within the control of Contractor. Delay,
disruption, and interference attributable to and within the control of a Subcontractor or
Supplier shall be deemed to be within the control of Contractor.
C. If Contractor’s performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor’s sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. abnormal weather conditions;
3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

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

5.01 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner’s interest therein as necessary for giving notice of or filing a mechanic’s or construction lien against such lands in accordance with applicable Laws and Regulations.
C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor’s operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor’s performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. Removal of Debris During Performance of the Work: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. Loading of Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any
part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 Subsurface and Physical Conditions

A. Reports and Drawings: The General or Supplementary Conditions identify:

1. no reports of explorations and tests of subsurface conditions at or contiguous to the Site are available;
2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
3. Technical Data contained in such reports and drawings.

B. Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Contract Documents with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner 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.

5.04 Differing Subsurface or Physical Conditions

A. Notice by Contractor: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

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

C.  **Owner’s Statement to Contractor Regarding Site Condition:** After receipt of Engineer’s written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations, in whole or in part.

D.  **Possible Price and Times Adjustments:**

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
   
a.  such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b.  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 Paragraph 13.03; and,

c.  Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a.  Contractor knew of the existence of such condition at the time Contractor made a 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 otherwise;

b.  the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor’s making such commitment; or

c.  Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor’s entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner’s issuance of the Owner’s written statement to Contractor regarding the subsurface or physical condition in question.

5.05 Underground Facilities

A. Contractor’s Responsibilities: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
   a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
   b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
   c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
   d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. Notice by Contractor: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. Engineer’s Review: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor’s resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer’s findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
D. **Owner’s Statement to Contractor Regarding Underground Facility:** After receipt of Engineer’s written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer’s written findings, conclusions, and recommendations in whole or in part.

E. **Possible Price and Times Adjustments:**

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
   a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
   b. 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 Paragraph 13.03;
   c. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times; and
   d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor’s entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner’s issuance of the Owner’s written statement to Contractor regarding the Underground Facility in question.

5.06 **Hazardous Environmental Conditions at Site**

A. **Reports and Drawings:** The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
2. Technical Data contained in such reports and drawings.

B. **Reliance by Contractor on Technical Data Authorized:** Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against
Owner 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 removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner’s written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner’s own forces or others in accordance with Article 8.

I. 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 failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual’s or entity’s own negligence.

J. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

A. CONTRACTOR shall furnish 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 CONTRACTOR’s obligations under the Contract Documents. These Bonds shall remain in effect at least until two years after the date when final payment becomes due, 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 current list of “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent’s authority to act.

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 requirements of Paragraph 6.01.B., CONTRACTOR shall within 20 days thereafter substitute another Bond and surety, both of which shall comply with the requirements of Paragraph 6.01.B. and 6.02.

D. If Contractor has failed to obtain a required bond or insurance, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
E. Upon request, Owner may provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of Work.

6.02 Licensed Sureties and Insurers

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by 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 coverage’s so required. Such surety and insurance companies shall also be satisfactory to OWNER and shall meet additional requirements and qualifications as may be provided in the Contract Documents.

6.03 CONTRACTOR’s Certificate of Insurance

A. CONTRACTOR shall deliver to OWNER, with copies to each additional insured, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) that CONTRACTOR is required to purchase and maintain. OWNER shall deliver to CONTRACTOR, with copies to each additional insured, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) that OWNER is required to purchase and maintain.

6.04 CONTRACTOR’s Liability Insurance

A. CONTRACTOR shall purchase and maintain such liability and other 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, and 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 worker’s 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: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) 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 there from; 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 so required by this Paragraph 6.04 to be purchased and maintained shall:
1. With respect to insurance required by Paragraph 6.04 inclusive, include as additional insured (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER’s Consultants, and any other individuals listed as additional insured, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each any of all such additional insured, and the insurance afforded to these additional insured 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 specified or required by Laws or Regulations, whichever is greater;

3. Include completed operations insurance;

4. Include contractual liability insurance covering CONTRACTOR’s indemnity obligations under General Conditions Paragraph 7.18;

5. Contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured 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);

6. 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 General Conditions Paragraph 14.03;

7. With respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two (2) years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured 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);

8. Contain a cross liability or severability of interest clause or endorsement. Insurance covering the specified additional insureds shall be primary insurance, and all other insurance carried by the additional insureds shall be excess insurance; and

9. With respect to worker’s compensation and employer’s liability, comprehensive automobile liability, commercial general liability, and umbrella liability insurance, and other liability insurance specified herein to be provided by CONTRACTOR, CONTRACTOR shall require its insurance carrier to waive all rights of subrogation against OWNER, ENGINEER, and their respective officers, directors, partners, employees, and agents.

C. Worker’s Compensation and Employer’s Liability Insurance. This insurance shall protect CONTRACTOR against all claims under applicable state worker’s compensation laws, including coverage as necessary for the benefits provided under the United States Longshoremen’s and Harbor Workers’ Act and the Jones Act. CONTRACTOR shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workers’ compensation law. This policy shall include an “all states” or “other states” endorsement.

The liability limits shall not be less than:
Workers’ compensation  
Statutory

Employers’ liability  
$1,000,000 each occurrence.

D. Comprehensive Automobile Liability Insurance. This insurance shall be occurrence type, written in comprehensive form, and shall protect CONTRACTOR, and OWNER, ENGINEER’s Consultants, and ENGINEER as additional insureds, against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, either on or off the project site whether they are OWNER, non-owned, or hired.

The liability limits shall not be less than:

Bodily injury and property damage  
$1,000,000 combined single limit for each occurrence.

E. Commercial General Liability Insurance. This insurance shall be occurrence type, written in comprehensive form, and shall protect CONTRACTOR, and OWNER, ENGINEER’s Consultants, and ENGINEER as additional insureds, against claims arising from injuries, sickness, disease, or death of any person or damage to property arising out of performance of the Work. The policy shall also include a per project aggregate limit endorsement, personal injury liability coverage, contractual liability coverage, completed operations and products liability coverage and coverage for blasting, explosion, collapse of buildings, and damage to underground property.

The liability limits shall not be less than:

Bodily injury and property damage  
$5,000,000 combined single limit for each occurrence.

ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

7.01 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 Labor; Working Hours

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Work hours shall be in accordance with the Contract Documents.

C. Night Work may be undertaken with the OWNER’S prior approval, however, may be revoked at any time by OWNER if CONTRACTOR fails to maintain adequate equipment and supervision for the proper prosecution and control of the Work at night.
7.03 **Services, Materials, and Equipment**

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

D. Until final completion of the Work is acknowledged by Owner, Contractor shall have responsible charge and care of the Work and all equipment and material to be used herein, and shall bear the risk of injury, loss, or damage to any part thereof by action of the elements or from any other cause, whether arising from the execution or from the non-execution of the Work.

E. Contractor shall rebuild, repair, restore, and make good all injuries, losses, or damages to any portion of the Work or the equipment or materials occasioned by any cause before completion and acceptance of the Work and shall bear the expense therefore. Contractor shall, at no additional cost to Owner, provide suitable drainage and suitable structures as necessary to protect the Work or any portion thereof from damage.

F. Suspension of the Work or the granting of an extension of time for any cause whatever shall not relieve Contractor of his responsibilities for the Work specified herein.

7.04 **“Or Equals”**

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or “or equal” item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an “or equal” item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
7.05 Substitutes

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests
for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
   a. shall certify that the proposed substitute item will:
      1) perform adequately the functions and achieve the results called for by the general design,
      2) be similar in substance to that specified, and
      3) be suited to the same use as that specified.
   b. will state:
      1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
      2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
      3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
   c. will identify:
      1) all variations of the proposed substitute item from that specified, and
      2) available engineering, sales, maintenance, repair, and replacement services.
   d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. **Engineer’s Evaluation and Determination**: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer’s determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. **Special Guarantee**: Owner may require Contractor to furnish at Contractor’s expense a special performance guarantee or other surety with respect to any substitute.
D.  **Reimbursement of Engineer’s Cost:** Engineer will record Engineer’s costs in evaluating a substitute proposed or submitted by Contractor. 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.

E.  **Contractor’s Expense:** Contractor shall provide all data in support of any proposed substitute at Contractor’s expense.

F.  **Effect of Engineer’s Determination:** If Engineer approves the substitution request; Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer’s denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06  **Concerning Subcontractors, Suppliers, and Others**

A.  Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B.  Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C.  Subsequent to the submittal of Contractor’s Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D.  Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E.  Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F.  If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the
replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner’s requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. 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.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. 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.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. 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 money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for
the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, 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.

7.08 Permits

A. Unless otherwise provided in the Contract Documents, 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 the submission of Contractor’s Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.09 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.

B. Pursuant to G.S. 105-164.14, the Owner is eligible for sales and use tax refunds on all materials which become a permanent part of the construction. The Contractor agrees to provide the Owner documentation which meets the requirements of Sales and Use Tax Regulation 42 regarding request for refund of sales and use taxes.

Those requirements are outlined below:

1. All refund claims must be substantiated by proper documentary proof and only those taxes actually paid by the claimant during the fiscal year covered by the refund claim may be included in the claim.

   Any local…sales or use taxes included in the claim must be separately stated in the claim for refund. In cases where more than one county’s sales and use tax has been
paid, a breakdown must be attached to the claim for refund showing the amount of each county’s...local tax separately.

To substantiate a refund claim for sales and use taxes paid on purchases of building material, supplies, fixtures, and equipment by its CONTRACTOR, the claimant must secure from such CONTRACTOR certified statements setting forth the cost of the property purchased from each vendor and the amount of state tax and local sales and/or use taxes paid thereon. Such statement must also include the cost of any tangible personal property withdrawn from the CONTRACTOR’s warehouse stock and the amount of state and local sales or use tax paid thereon by the CONTRACTOR. Similar certified statements by his subcontractors must be obtained by the CONTRACTOR and furnished to the claimant (OWNER). Any local...sales or use taxes included in the CONTRACTOR’s statements must be shown separately from the State sales or use taxes. The CONTRACTOR’s statements must not contain sales or use taxes paid on purchases of tangible personal property purchased by such contractors for use in performing the Contract which does not annex to, affix to or in some manner become a part of the building or structure being erected, altered or repaired for the governmental entities as defined by G.S. 105-164.14 (c). Examples of property on which sales and use tax has been paid by the Contractor and which should not be included in the Contractor’s statement are scaffolding, forms for concrete, fuel for the operation of machinery and equipment, tools, equipment repair parts and equipment rentals, blueprints, etc.

The CONTRACTOR shall submit notarized sales tax certificates which meet the requirements detailed above with each Application for Payment. Payment will not be made until the sales tax certificate(s) have been submitted to the OWNER. OWNER is the recipient of sales tax refunds and no such funds shall be provided to CONTRACTOR, or claim made by CONTRACTOR thereof.

7.10 Laws and Regulations

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor’s compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and 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 such Work or other action. It shall not be Contractor’s responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor’s obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor’s Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations
having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

D. Employment Requirements. Employment requirements shall be as specified within the Contract Documents.

E. Work in Confined Spaces. The provisions of 29 CFR Section 1910.146, “Permit-Required Confined Spaces” has been adopted by OWNER and shall apply to Work under this Contract. OWNER has established a confined-space entry program for its own use, and will be responsible for enforcement of the program for OWNER’s personnel only.

F. CONTRACTOR shall establish and maintain a confined-space entry program appropriate to the structures and conditions encountered. The program shall meet the requirements of 29 CFR 1910.146 and shall specifically address the provisions of Paragraph (d) therein. CONTRACTOR shall enforce the requirements of Paragraphs (e) and (f), shall establish and conduct a training program in accordance with Paragraph (g), and shall comply with all other applicable requirements of the referenced regulation.

G. CONTRACTOR shall prepare a complete written program covering the requirements of this paragraph and the reference regulation. The written program shall be submitted through ENGINEER for review and approval by OWNER, and shall be modified and resubmitted if required. No Work shall be done by CONTRACTOR or any of CONTRACTOR’s personnel or Subcontractors in any confined spaces until CONTRACTOR’s program has been approved by OWNER and OWNER is satisfied that the program provisions are in place.

H. Upon request, OWNER’s confined space entry program will be made available to CONTRACTOR for review, but OWNER’s program shall not be considered as necessarily addressing all steps and measures to be taken into account. CONTRACTOR shall cooperate with OWNER for coordination of activities whenever CONTRACTOR’ personnel and OWNER’s personnel will both be working in or near the confined spaces at the same time.

I. North Carolina License Requirement. Pursuant to Section 87-15, General Statutes of North Carolina, Bidders must show evidence of a North Carolina Contractor’s License prior to consideration of their bids.

J. Collusive Bidding. In accordance with Section 122(c) of Title 23 USC, and G.S.75-5 (b) (7) of the State of North Carolina, the Contractor (Bidder), by submission and execution of this Bid, certifies that he has not entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with his Bid on this project.

K. Discrimination. In accordance with G.S. 143-135.5, any Bidder who has been found guilty of discrimination within the last two years on the basis of race, gender, religion, national origin, age, physical disability, or any other unlawful basis in its solicitation, selection, hiring, or treatment of other businesses are debarred from bidding this Work.

7.11 Record Documents

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

7.12 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:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall 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 Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner’s safety programs, if any. 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.

D. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor’s duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and
Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

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

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

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

7.15 Emergencies
A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER written notice immediately, and in no instance more than 24 hours after the alleged emergency, 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.

7.16 Shop Drawings, Samples, and Other Submittals
A. Shop Drawing and Sample Submittal Requirements:
   1. Before submitting a Shop Drawing or Sample, Contractor shall have:
      a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
      b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
      c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
      d. determined and verified all information relative to Contractor’s responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
   2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor’s obligations under the Contract Documents with respect to Contractor’s review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. **Submittal Procedures for Shop Drawings and Samples:** Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. **Shop Drawings:**
   a. Contractor shall submit the number of copies required in the Specifications.
   b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. **Samples:**
   a. Contractor shall submit the number of Samples required in the Specifications.
   b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer’s review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. **Other Submittals:** Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. **Engineer’s Review:**

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer’s review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer’s review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer’s review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer’s review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer’s review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer’s review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer’s receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. Resubmittal Procedures:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer’s time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer’s charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer’s charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 Contractor’s General Warranty and Guarantee

A. 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 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;
   6. the issuance of a notice of acceptability by Engineer;
   7. any inspection, test, or approval by others;
   8. any correction of defective Work by Owner; or
   9. any expiration of a correction period.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor’s performance obligations to Owner for the Work described in the assigned contract.

7.18 **Indemnification**

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, 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 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 7.18.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 7.18.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.

7.19 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 Laws and Regulations.

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, 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, Engineer’s review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer’s review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.
ARTICLE 8 – OTHER WORK AT THE SITE

8.01 Other Work

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner’s employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner’s employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner’s employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others’ work with the written consent of Engineer and the others whose work will be affected.

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

8.02 Coordination

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner’s employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the General Conditions, Contract Documents or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

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

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner’s employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor’s rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor’s entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor’s ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner’s contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner’s employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor’s failure to take reasonable and customary measures with respect to Owner’s other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor’s failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor’s actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.
ARTICLE 9 – OWNER’S RESPONSIBILITIES

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

9.02 Replacement of Engineer
   A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer’s status under the Contract Documents shall be that of the former Engineer.

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

9.04 Pay When Due
   A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 Lands and Easements; Reports, Tests, and Drawings
   A. Owner’s duties with respect to providing lands and easements are set forth in Paragraph 5.01.
   B. Owner’s duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
   C. Article 5 refers to Owner’s identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 Insurance
   A. Owner’s responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 Change Orders
   A. Owner’s responsibilities with respect to Change Orders are set forth in Article 11.

9.08 Inspections, Tests, and Approvals
   A. Owner’s responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

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

A. Owner’s responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 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 (including obligations under proposed changes in the Work).

9.12 Safety Programs

A. While at the Site, Owner’s employees and representatives shall comply with the specific applicable requirements of Contractor’s safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION

10.01 Owner’s Representative

A. Engineer will 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.

10.02 Visits to Site

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor’s executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer 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 10.08. Particularly, but without limitation, during or as a result of Engineer’s visits or observations of Contractor’s Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor’s means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 Project Representative

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such
Resident Project Representative will be as provided in the Contract Documents, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. 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.

10.04 Rejecting Defective Work

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

10.05 Shop Drawings, Change Orders and Payments

A. Engineer’s authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer’s authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer’s authority as to Change Orders is set forth in Article 11.

D. Engineer’s authority as to Applications for Payment is set forth in Article 15.

10.06 Determinations for Unit Price Work

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

10.07 Decisions on Requirements of Contract Documents and Acceptability of Work

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work insofar as the subject matter of any pertinent claim, dispute, or other matter falls within the realm of the technical expertise of the ENGINEER. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith. ENGINEER shall not render any decision on any claims, disputes, or other matters of which, at ENGINEER’s sole discretion, requires legal, rather than technical interpretation.

10.08 Limitations on Engineer’s Authority and Responsibilities

A. Neither Engineer’s authority or responsibility under this Article 10 or under any other provision of the Contract, 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 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 Compliance with Safety Program

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

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

11.01 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. Change Orders:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. Work Change Directives: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive’s effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must
submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. **Field Orders**: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 **Owner- Authorized Changes in the Work**

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

11.03 **Unauthorized Changes in the Work**

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

11.04 **Change of Contract Price**

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

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on
the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor’s fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. **Contractor’s Fee:** When applicable, the Contractor’s fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
   a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor’s fee shall be 15 percent;
   b. for costs incurred under Paragraph 13.01.B.3, the Contractor’s fee shall be five percent;
   c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor’s fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the overhead costs attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
   d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
   e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor’s fee by an amount equal to five percent of such net decrease; and
   f. when both additions and credits are involved in any one change, the adjustment in Contractor’s fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 **Change of Contract Times**

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

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

11.06 **Change Proposals**

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the
requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. **Procedures**: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. **Engineer’s Action**: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor’s supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer’s inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. **Binding Decision**: Engineer’s decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. **Resolution of Certain Change Proposals**: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner’s acceptance of defective Work under Paragraph 14.04 or Owner’s correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer’s recommendation if the change in the Work
involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 Notification to Surety

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

ARTICLE 12 – CLAIMS (NOT USED)

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

13.01 Cost of the Work

A. Purposes for Determination of Cost of the Work: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. Costs Included: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work 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, and 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 13.01.

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 6.05), 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 communication 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 that Contractor is required by the Contract Documents to purchase and maintain.

C. 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, expediters, 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 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor’s fee.

2. Expenses of Contractor’s principal and branch offices other than Contractor’s office at the Site.

3. Any part of Contractor’s capital expenses, including interest on Contractor’s capital employed for the Work and charges against Contractor for delinquent payments.

4. 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 Paragraph 13.01.B.

D. Contractor’s Fee: When the Work as a whole is performed on the basis of cost-plus, Contractor’s fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor’s fee shall be determined as set forth in Paragraph 11.04.C.

E. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.
13.02 **Allowances**

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. **Cash Allowances:** Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor’s costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. **Contingency Allowance:** Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 **Unit Price Work**

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor’s overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer’s preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer’s written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer’s written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and
3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

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

14.01 Access to Work

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

14.02 Tests, Inspections, and Approvals

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

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, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
2. to attain Owner’s and Engineer’s acceptance of materials or equipment to be incorporated in the Work;
3. by manufacturers of equipment furnished under the Contract Documents;
4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor’s purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.
E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor’s expense unless Contractor had given Engineer timely notice of Contractor’s intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

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

B. Engineer’s Authority: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. Notice of Defects: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. Correction, or Removal and Replacement: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. Preservation of Warranties: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner’s special warranty and guarantee, if any, on said Work.

F. Costs and Damages: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer’s confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages 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. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the
Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 Uncovering Work

A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer’s observation, and then replace the covering, all at Contractor’s expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, 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, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor’s full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

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

14.06 Owner May Stop the Work

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

14.07 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude
Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor’s services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner’s representatives, agents and employees, Owner’s other contractors, and Engineer and Engineer’s consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor’s defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner’s rights and remedies under this Paragraph 14.07.

E. Nothing in this Article 14 concerning the correction period shall establish a period of limitation with respect to any other obligation which CONTRACTOR has under the Contract Documents. The establishment of time periods relates only to the specific obligation of CONTRACTOR to correct Work, and has no relationship to the time within which CONTRACTOR’s obligations under the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish CONTRACTOR’s liability with respect to CONTRACTOR’s obligations other than to specifically correct the Work.

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

15.01 Progress Payments

A. Basis for Progress Payments: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. Applications for Payments:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner’s interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor’s legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

4. Materials and Equipment. Payments for stored materials and equipment shall be based only upon the actual cost to CONTRACTOR of the materials and equipment and shall not include any overhead or profit to CONTRACTOR.

Partial payments will not be made for undelivered materials or equipment.

5. Schedules and Data. During the progress of the Work, each application for Payment shall be accompanied by CONTRACTOR's updated schedule of values or progress report, with such shop drawings schedules, procurement schedules, values of materials and equipment on hand included in the application, and other data specified or reasonably required by ENGINEER.

C. Review of Applications:

1. Engineer will, within fifteen (15) days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer’s reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer’s recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer’s observations of the executed Work as an experienced and qualified design professional, and on Engineer’s review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer’s knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (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 13.03, 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; 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 money 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 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer’s opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. Payment Becomes Due:

1. Forty-five (45) days after presentation of the Application for Payment to Owner with Engineer’s recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.
E. **Reductions in Payment by Owner:**

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

   a. claims have been made against Owner on account of Contractor’s conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor’s conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

   b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

   c. Contractor has failed to provide and maintain required bonds or insurance;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

   e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

   f. the Work is defective, requiring correction or replacement;

   g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

   h. the Contract Price has been reduced by Change Orders;

   i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

   j. liquidated damages have accrued as a result of Contractor’s failure to achieve Milestones, Substantial Completion, or final completion of the Work;

   k. 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;

   l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
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 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 Contractor’s Warranty of Title

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

15.03 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor’s notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. 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 preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner’s objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner’s use or occupancy of the Work following Substantial Completion, review the builder’s risk insurance policy with respect to the end of the builder’s risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner’s use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor
may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. 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 punch list.

15.04 Partial Use or Occupancy

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor’s performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If 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 15.03 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 6.05 regarding builder’s risk or other property insurance.

15.05 Final Inspection

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

15.06 Final Payment

A. Application for Payment:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules,
guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;
   b. consent of the surety signed by an agent, accompanied by a certified copy of such agent’s authority to act for the surety;
   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment;
   d. a list of all disputes that Contractor believes are unsettled; and
   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

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

1. If, on the basis of Engineer’s observation of the Work during construction and final inspection, and Engineer’s review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor’s other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer’s recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer’s opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
C. **Completion of Work**: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer’s written recommendation of final payment.

D. Final payment shall become due at the time provided in Section 143-134.1, General Statutes of North Carolina.

15.07 **Waiver of Claims**

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor’s failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor’s continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 **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 Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner’s written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;

2. correct such defective Work;

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner’s written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor’s obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor’s persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor’s disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor’s repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
E. If Owner proceeds as provided in Paragraph 16.02.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 the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. 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.

F. Where Contractor’s services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate For Convenience

A. The OWNER may, at any time, terminate the Contract in whole or in part for the OWNER’s convenience and without cause. Termination by the OWNER under this paragraph shall be by a notice of termination delivered to the CONTRACTOR specifying the extent of termination and the effective date.

B. Upon receipt of a notice of termination for convenience, the CONTRACTOR shall immediately, in accordance with instructions from the OWNER, proceed with performance of the following duties regardless of delay in determining or adjusting amounts due under this paragraph:
   1. Cease operations as specified in the notice;
   2. Place no further orders and enter into no further subcontracts for materials, labor, services, or facilities except as necessary to complete continued portions of the Contract;
   3. Terminate all subcontracts and orders to the extent they relate to the Work terminated;
   4. Proceed to complete the performance of Work not terminated; and
   5. Take actions that may be necessary, or that the OWNER may direct, for the protection and preservation of the terminate Work.

C. Upon such termination, the CONTRACTOR shall recover as its sole remedy payment of the percentage of the Contract Price equal to the percentage of the Work performed satisfactorily and not previously paid for as determined by the ENGINEER. The CONTRACTOR hereby waives and forfeits all other claims for payment and damages, including, without limitation, anticipated profits or revenue or other economic loss arising out of or resulting from such termination.
D. The OWNER shall be credited for (1) payments previously made to the CONTRACTOR for the terminated portion of the Work; (2) claims that the OWNER has against the CONTRACTOR under the Contract; and (3) the value of the materials, supplies, equipment, or other items that are to be disposed of by the CONTRACTOR that are part of the Contract Price.

16.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or OWNER fails for 60 days to pay CONTRACTOR any sum finally determined to be due, the CONTRACTOR may, upon seven days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in paragraph 16.03. In lieu of terminating the Contract and without prejudice to any other right or remedy, if OWNER has failed for 60 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.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

A. Disputes Subject to Final Resolution: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. Final Resolution of Disputes: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions or Contract Documents; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 Computation of Times
A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 Cumulative Remedies
A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 Limitation of Damages
A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 No Waiver
A. A party’s non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 Survival of Obligations
A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.
B. CONTRACTOR shall obtain from all Suppliers and manufacturers any and all warranties and guarantees of such Suppliers and manufacturers, whether or not specifically required by the Specifications, and shall assign such warranties and guarantees to OWNER. CONTRACTOR further agrees to perform the Work in such a manner to preserve any and all manufacturer’s warranties. With respect thereto, CONTRACTOR shall render reasonable assistance to OWNER when requested, in order to enable OWNER to enforce such warranties and guarantees. The assignment of any warranties or guarantees shall not affect the correction period or any other provisions of these Contract Documents.

18.07 Controlling Law
A. This Contract is to be governed by the law of the state in which the Project is located.
18.08  *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.
LEFT BLANK INTENTIONALLY
SECTION 000701
SUPPLEMENTARY CONDITIONS

SECTIONS

SC-1 CONSTRUCTION DETAILS
SC-2 COORDINATION OF PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS
SC-3 SUBSTITUTION OF EQUIPMENT
SC-4 NOTICES
SECTION 000701
SUPPLEMENTARY CONDITIONS

SCOPE. These Supplementary Conditions amend or supplement the General Conditions and other provisions of the Contract Documents as indicated herein. All provisions which are not so amended or supplemented remain in full force and effect.

SC-1. CONSTRUCTION DETAILS
A. When reference is made to Drawings in the Technical Specifications, the reference shall include both the Drawings included under separate cover and the Drawings of Construction Details included herein.

SC-2. COORDINATION OF PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS
A. In case of discrepancy, computed dimensions shall govern over scaled dimensions; supplemental specifications shall govern over Standard Specifications; and Special Provisions shall govern over Drawings, Supplemental and Standard Specifications.

SC-3. SUBSTITUTION OF EQUIPMENT
A. For all major equipment supplied, an affidavit signed by a corporate official must be submitted with the shop drawings stating that their equipment is equal to or exceeds the requirements of the specifications prepared by the ENGINEER and that its lifetime performance will be no less than equal to that obtainable from competitive equipment functioning in the same type of application and as manufactured by those companies identified in the specifications by the ENGINEER.

SC-4. NOTICES
Notices or other papers required to be delivered by the CONTRACTOR to the OWNER shall be delivered to the office of the OWNER's ENGINEER:

SCS Engineers, PC
2520 Whitehall Park Drive, Suite 450,
Charlotte, NC 28273
Phone: 704.504.3107

END OF SECTION
SECTION 004300

CONTRACT FORMS
Notice to Award

SECTION 004300.01
NOTICE TO AWARD

Dated ________________ , 20____

TO: ____________________________________________

(BIDDER)

ADDRESS: ____________________________________________

_____________________________________________________

_____________________________________________________

OWNER’S CONTRACT NO. ___________________________________

PROJECT _____________________________________________

CONTRACT FOR ______ Landfill Gas Collection and Control System Construction
(Insert name of Contract as it appears in the Bidding Documents)

You are notified that your Bid dated __________, 20____ for the above Contract has been
considered. You are the apparent successful bidder and have been awarded a contract for
Furnishing the material, equipment, labor, and supervision for construction of the landfill gas
collection and control system at the New Hanover County Landfill.

The Contract Price of your contract is ________________________.

Contract payment by the Owner will be made based the unit prices listed in the Bidder’s
submitted Bid Form and actual confirmed quantities of work completed.

Four (4) sets of the Contract Documents (Specifications and Drawings) transmitted under
separate cover.

You must comply with the following conditions precedent within fifteen (15) days of the date
you receive this Notice of Award.

1. Deliver to the Owner all required copies of the fully executed counterparts of the
   Agreement.

2. Deliver with the executed Agreement the Contract security (Bonds) and Insurance
   Certificates as specified in the Instructions to Bidders (Section 002113), General
   Conditions (Article 2 and 6), and Supplementary Conditions (Article 2 and 6).

3. Other conditions precedent: None.
Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten (10) days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement.

______________________________
New Hanover County, North Carolina
(Owner)

By: ________________________________
(Authorized Signature)

______________________________
(Title)

ACCEPTANCE OF AWARD

______________________________
(Contractor)

By: ________________________________
(Authorized Signature)

______________________________
(Title)

Copy to Engineer
SECTION 004300.02

NOTICE TO PROCEED

The undersigned, if awarded the bid, hereby agrees to execute a contract with New Hanover County in the form specified after the award and to begin the process of providing the “Landfill Gas Collection and Control System Construction; County Contract No. _____” as specified in this bid upon receipt of a Purchase Order issued by New Hanover County and the fully executed contract.

Addenda
Receipt of the following Addendum is acknowledged:

Addendum No. ___________ Date__________________, 2018

Bidder Information
Please check as appropriate and complete the items below. The Bidder is:

☐ An Individual: __________________________________________________________

☐ A Partnership between: ________________________________________________
_______________________________________________________________________
_______________________________________________________________________

☐ A Joint Venture consisting of: __________________________________________
_______________________________________________________________________

☐ A Corporation organized under the laws of the State of ____________________

(List name of state appearing on the corporate seal and affix seal below where indicated.)

Signature & Date: ________________________________________________________

Name & Title: ____________________________________________________________

Company: _______________________________________________________________

Address: __________________________________________________________________

Telephone #: __________________________________________________________________
Change Proposal Request No. _____
(Not a Change Order)

<table>
<thead>
<tr>
<th>Project Name:</th>
<th>Project Number:</th>
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<tbody>
<tr>
<td>Project Owner:</td>
<td>Date:</td>
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<tr>
<td>Contractor:</td>
<td>Initiated by:</td>
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</tbody>
</table>

Attention:
The following change in the contract on this project is proposed.
* A breakdown of cost SHALL be attached.
* Work shall not commence until authorized by the Owner.

Description of the Proposed Change:

All work shall be in accordance with the terms, stipulations, and conditions of the original Contract Documents. If the Work herein provided for is Approved by Change Order, the time of completion will be:

- [ ] Increased
- [ ] Decreased
- [ ] Unchanged
  by __________ calendar days.

This change
- [ ] Add
- [ ] Deduct
- [ ] Not

$ __________

ENGINEERS Recommendation:

By: ENGINEER

Date

Owners Action:

By: Owner

Date

General Contractor

By: Owner

Date
It is agreed to modify the Contract referred to above as follows:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item and Description of Changes</th>
<th>Contract Price</th>
<th>Contract Time</th>
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</table>

Sub-Total

Difference Net

Summary: It is agreed to modify the Contract referred to above as follows:

Contract Price prior to this Change Order

Contract Time prior to this Change Order

Net (decrease) (increase) of this Change Order

Net (decrease) (increase) of this Change Order

Revised Contract Price with all approved Change Orders

Revised Contract Time with all approved Change Orders

The changes included in this Change Order are to be accomplished in accordance with the terms, stipulations and conditions of the original Contract as though included therein.

Accepted for Contractor by: Date

Recommended for Approval by ENGINEER Date

Approved for Owner by: Attest

Approved: (Other - when required) Date

Distribution:  
  - Owner
  - Contractor
  - ENGINEER
  - Field
  - Other
Contractor Compliance Requirements
Introduction

The safety and health of all contractors, customers, and employees of the New Hanover County Department of Environmental Management is of primary importance. As a result, the prevention of occupationally induced injuries and illnesses will be given precedence over operating productivity whenever necessary.

Our goal is to maintain a safety and health program conforming to all applicable OSHA standards and to lead in safety program management within our industry. To be successful will require contractor cooperation in all safety and health matters.

As a contractor you will be required, as part of your contract, to take an active role in the Department of Environmental Management safety and health program. The following contractor safety and health requirements, when adhered to, will ensure safety for contractors, customers, and County employees. Additionally, potential damage to equipment and property will be avoided. It is impossible to document all possible situations or to provide precise guidance for every contingency a contractor may encounter in the course of their work. However, adherence to the rules as written and the desire to apply safe work practices will result in the highest level of safety.
General Requirements

1. All contractor employees shall abide by the Department of Environmental Management safety and health rules and regulations at all times. The DEM Safety Manual is available for copy or review in each of the Department’s offices.

2. The contractor and all contracted employees are required to follow the procedures for signing in and out. Procedures may differ depending on the section of the department the contractor is working in; they will be explained fully before the work begins.

3. The contractor shall have a competent individual in charge at the job site to supervise the job, conduct an adequate accident prevention program, and ensure compliance to OSHA and DEM rules.

4. All accidents or injuries shall be reported immediately to the DEM Project Manager or Safety Manager.

5. Contractor employees are not allowed to enter areas other than the work site, unless it is required for the performance of their job.

6. The contractor shall inform the Project Manager of any known hazardous conditions that exist, due to the contract work being done, in areas where Departmental employees may be exposed to the known hazards.

7. The contractor shall provide Material Safety Data Sheets for all containers of hazardous substances brought onto DEM property.

8. The contractor shall sign the “Contractor Hold Harmless” waiver form in order to use any Department equipment.

9. Periodic job site inspections will be conducted by the DEM Project Manager or Safety Manager to ensure that the job is proceeding safely in accordance with safety rules.

10. Smoking is prohibited on all construction projects at the Landfill.

11. Violation of these rules is grounds for immediate termination of contract work.
Standards of Conduct

The Department of Environmental Management has established standards to ensure the smooth, safe, and efficient operations of the Department. Violation of these standards is considered serious and may lead to termination of the contract. The following are prohibited:

1. Willful damage to any Departmental property, customer property, or the property of Department employees.
2. Possession, use, or distribution of alcohol, narcotics, or illegal drugs on Department property.
3. Possession of firearms, ammunition, concealed weapons, or explosives (unless properly authorized).
4. Abusive or threatening language, harassment, disrespectful behavior, workplace violence, or interfering with the work of Department employees.
5. Theft or attempted theft from the Department or Department employees.
6. Refusal to perform contracted work or refusal to obey instructions.
7. Sleeping on the job.
8. Negligence or conduct which could result in injury or damage to property.
**Contractor Safety Training**

Please place a check by each of the following categories in which one or more of your employees has been trained. It is understood that not all contractors will have employees who are trained in all of the areas listed.

- [ ] Personal Protective Equipment
- [ ] First Aid and CPR
- [ ] Lockout/Tagout
- [ ] Confined Space Entry
- [ ] Respiratory Protection
- [ ] Hazardous Communication
- [ ] Material Safety Data Sheets
- [ ] Fire Prevention and Protection
- [ ] Fall Protection
- [ ] Scaffolding
- [ ] Heavy Equipment Training/Certification (includes bulldozer, loader, forklift, excavator, grader, roller, backhoe, bobcat)
- [ ] Welding, Cutting, and Brazing
- [ ] Electrical Safety
- [ ] Trenching/Excavation
- [ ] Other ____________________________
- [ ] Other ____________________________

* If the contracting company has ten (10) or more employees, they will be required to present OSHA 300 Logs, at a minimum for the past three calendar years, along with their bid.
The Department of Environmental Management reserves the right to ask for any training records from the categories that were checked above. The County reserves the right to reject the bid of any firm that cannot document proper safety training as it relates to conducting the work included in the contract.

**Contractor Agreement to Comply**

I, _____________________________, a representative of _____________________________ do hereby acknowledge that my company has received a copy of the guidelines governing contract work being performed on New Hanover County Department of Environmental Management property. It is agreed that as part of the contract my company and its employees will comply with these guidelines and all the written programs which apply to the work being performed.

Signed _____________________________ Date _____________________________

(Contractor)

Please return this signed page to the designated Department of Environmental Management Project Manager. A copy of the signed form will be kept in the Safety Officer’s files.
SECTION 005213

AGREEMENT

NEW HANOVER COUNTY CONTRACT NO. ____________

NEW HANOVER COUNTY, NORTH CAROLINA

THIS CONTRACT made and entered into this day ____________ of ______________, 2018
by and between NEW HANOVER COUNTY, a political subdivision of the State of North
Carolina, hereinafter referred to as "County"; and __________________________ hereinafter
referred to as "Contractor."

WITNESSETH:

That the Contractor, for the consideration hereinafter fully set out, hereby agrees
with the County as follows:

1. Performance. Contractor shall furnish the material, equipment, labor, and
supervision for construction of a landfill gas collection and control system at the New Hanover
County Landfill located at 5210 Hwy 421 N., Wilmington, N.C., as more fully described on
Exhibit A, attached hereto and incorporated herein by reference.

2. Time of Performance. The term of this Agreement shall begin from receipt
of a Notice to Proceed (NTP). The work shall be substantially completed within two hundred
and ten (210) calendar days after the date when the Agreement time commences to run as
provided in Article 4 of the General Conditions, and completed and ready for final payment in
accordance with Paragraph 15.06 of the General Conditions within two hundred and thirty (230)
calendar days from issuance of the NTP.

3. Contract Documents. The Contract Documents which comprise the entire
agreement between County and Contractor concerning the Work consist of the following:

a. This Agreement.
b. Insurance.
c. Performance and Payment Bonds.
d. Division 000700 - General Conditions.
e. Division 000701 - Supplementary Conditions.
f. Specifications (Division 1 - General Requirements; Division 3 – Concrete;
   Division 11 – Equipment; Division 26 – Electrical; Division 31 – Earthwork;
   Division 33 – Utilities; Division 42 – Process Gas and Liquid Handling,
   Purification, and Storage Equipment; and Division 44 – Pollution and Waste
   Control Equipment).
g. Construction Drawings consisting of sixteen (16) sheets, with each sheet bearing the following general title:

New Hanover County Landfill
Landfill GCCS Construction

h. Addenda ________ through __________.

i. Exhibits to this Agreement, enumerated as follows:
   1. Contractor's Bid.
   2. Notice of Award.

j. The following, which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto:
   1. Notice to Proceed.
   2. Written Amendments.
   3. Work Change Directives.

3.1 The Contract Documents may be amended, modified, or supplemented only as provided in Paragraph 3.04 of the General Conditions.

4. Liquidated Damages. County and Contractor recognize that time is of the essence of this Agreement and that County will suffer financial loss if the Work is not complete within the times specified in Paragraph 2 above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration preceding the actual loss suffered by County if the Work is not completed on time. Accordingly, instead of requiring any such proof, County and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay County five hundred dollars ($500) for each day that expires after the time specified in Paragraph 2 for Substantial Completion until the Work is substantially completed. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times or any proper extension thereof granted by County, Contractor shall pay County five hundred dollars ($500) for each day that expires after the time specified in Paragraph 2 for completion and readiness for final payment until the Work is complete and ready for final payment.

4.1 The liquidated damages set forth herein shall not be accumulative. If Substantial Completion of the Work is not met within the time specified for final completion of all Work, the liquidated damages shall continue to be at the rate or rates specified for default on Substantial Completion until Substantial Completion is attained. If the Work is not then finally completed, the rate or rates specified for default on final completion shall apply until final completion is attained.

4.2 County shall have the right to deduct the liquidated damages from any money in its hands, otherwise due, or to become due, to Contractor, or to initiate applicable
dispute resolution procedures and to recover liquidated damages for non-performance of this Contract within the time stipulated.

5. **Contractor’s Representations.** In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

   a. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
   
   b. Contractor has visited the site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, and performance of the Work.
   
   c. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
   
   d. Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
   
   e. Contractor is aware of the general nature of work to be performed by the County and others at the Site that relates to the Work as indicated in the Contract Documents.
   
   f. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the site, reports and drawings identified in the Contract Drawings, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.
   
   g. Contractor has given the County written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by the County is acceptable to Contractor.
   
   h. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

6. **Payment.** County hereby agrees to pay for the cost of this Contract not to exceed a sum of ($                    ) Dollars. Payment is contingent upon a final County inspection and acceptance of work or services.

7. **Extra Work.** County and Contractor shall negotiate and agree upon the value of any extra work or services prior to the issuance of a County Change Order or Renewal/Amendment (CRA) form covering said extra work or services. Such Change Order or
CRA shall set forth the corresponding adjustment, if any, to the Contract Price and Contract Time.

8. **Indemnity.** Contractor shall indemnify and hold County, its officers, officials, agents, and employees, harmless against any and all claims, demands, causes of action, or other liability, including attorney fees, for any property damages, personal injuries or death arising out of, relating to, or resulting from the negligence, willful act, or omission of Contractor, its agents, employees and subcontractors in the performance of work or services.

9. **Insurance.** Before commencing any work or services, Contractor shall procure insurance in Contractor's name and maintain all insurance policies for the duration of the Contract of the types and in the amounts listed in this Contract. The insurance shall provide coverage against claims for injuries to persons or damages to property which may arise from operations or in connection with the performance of the work hereunder by Contractor, its agents, representatives, employees, or subcontractors, whether such operations by itself or anyone directly or indirectly employed by it.

10. **Minimum Scope and Limits of Insurance**

10.1. **Commercial General Liability**

10.1.1 Contractor shall maintain Commercial General Liability (CGL) and if necessary, Commercial Umbrella Liability (CUL) insurance with a total limit of not less than $5,000,000 each occurrence for bodily injury and property damage. If such CGL insurance contains a general aggregate limit, it shall apply separately to this project/location or the general aggregate shall be twice the required limit.

10.1.2 CGL insurance shall be written on Insurance Services Office (ISO) "occurrence" form CG 00 01 covering CGL or its equivalent and shall cover the liability arising from premises, operations, independent contractors, products completed operations, personal and advertising injury, and liability assumed under an insured contract, including the tort liability of another assumed in a business contract.

10.1.3 County, its officers, officials, agents, and employees are to be covered as additional insureds under the CGL by endorsement CG 20 26 or an endorsement providing equivalent coverage as respects to liability arising out of activities performed by or on behalf of Contractor; products and completed operations of Contractor; premises owned, leased or used by Contractor; and under the CUL, if any. The coverage shall contain no special limitations on the scope of protection afforded to County, its officers, officials, agents, and employees.

10.1.4 Contractor's CGL insurance shall be primary as respects County, its officers, officials, agents, and employees. Any other insurance or self-insurance
maintained by County, its officers, officials, agents, and employees shall be in excess of and shall not contribute to Contractor's insurance.

10.2.  **Worker's Compensation and Employe'rs Liability**

10.2.1 Contractor shall maintain Worker's Compensation as required by the General Statutes of the State of North Carolina and Employer's Liability Insurance.

10.2.2 The Employer's Liability, and if necessary, CUL insurance shall not be less than $1,000,000 each accident for bodily injury by accident, $1,000,000 each employee for bodily injury by disease, and $1,000,000 policy limit.

10.2.3 The insurer shall agree to waive all rights of subrogation against County, its officers, officials, agents, and employees for losses arising from services performed by Contractor for County.

10.3.  **Business Auto Liability**

10.3.1 Contractor shall maintain Business or Personal Auto Liability and, if necessary, CUL insurance with a limit of not less than $1,000,000 each accident.

10.3.2 Such insurance shall cover liability arising out of any auto, including owned, hired, and non-owned autos used in performance of services.

10.3.3 Business Auto coverage shall be written on ISO form CA 00 01, or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage equivalent to that provided in ISO form CA 00 01.

10.3.4 Contractor's Business Auto Liability insurance shall be primary as respects County, its officers, officials, agents, and employees. Any other insurance or self-insurance maintained by County, its officers, officials, agents, and employees shall be in excess of and shall not contribute to Contractor's insurance.

10.4.  **Deductibles and Self-Insured Retentions**

10.4.1 Any deductibles or self-insured retentions must be declared to and approved by County. At the option of County, either the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects County, its officers, officials, agents, or employees; Contractor shall procure a bond guaranteeing payment of deductibles or self-insured retentions.
10.4.2. Contractor shall be solely responsible for the payment of all deductibles to which all policies are subject, regardless of whether County is an insured under the policy.

10.5. **Miscellaneous Insurance Provisions**

10.5.1. Any failure to comply with reporting provisions of the policies listed in this Contract shall not affect coverage provided to County, its officers, officials, agents, and employees.

10.5.2. Each insurance policy required by this Contract shall be endorsed to state that coverage shall not be canceled by either party except after thirty (30) days prior written notice has been given to County, 230 Government Center Drive, Ste. #125, Wilmington, NC 28403.

10.5.3. If Contractor's liability policies do not contain the standard ISO separation of insureds provision, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

10.6. **Acceptability of Insurers.** Insurance is to be placed with insurers licensed to do business in the State of North Carolina with an A.M. Best's rating of no less than A VII unless County has granted a specific exemption.

10.7. **Evidence of Insurance**

10.7.1. Contractor shall furnish County with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements prior to commencing the work or services, and thereafter upon renewal or replacement of each certified coverage until all operations under this Contract are deemed complete.

10.7.2. Evidence of additional insured status shall be noted on the certificate of insurance as per requirements in this Contract.

10.7.3. With respect to insurance maintained after final payment in compliance with requirements, an additional certificate(s) evidencing such coverage shall be provided to County with final application for payment and thereafter upon renewal or replacement of such insurance until the expiration of the period for which such insurance must be maintained.

10.8. **Subcontractors.** Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein. CGL
coverage shall include independent contractors' coverage, and Contractor shall be responsible for assuring that all subcontractors are properly insured.

10.9. **Conditions**

10.9.1. County may, at its discretion and with approval of Risk Management and the Finance Department, accept letters of credit or custodial accounts in lieu of specific insurance requirements.

10.9.2. Contractor shall warrant that the insurance contributing to the satisfaction of insurance requirements in this Contract and shall not be canceled, terminated, or modified by Contractor without prior written approval of County.

10.9.3. Contractor shall promptly notify New Hanover County Environmental Management and New Hanover County Risk Management at (910) 798-7499 of any accidents arising in the course of operations under the Contract causing bodily injury or property damage.

10.9.4. County reserves the right to obtain complete, certified copies of all required insurance policies.

10.9.5. Failure of County to demand a certificate of insurance or other evidence of full compliance with these insurance requirements or failure of County to identify a deficiency from evidence that is provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

10.9.6. County does not represent that coverage and limits will be adequate to protect Contractor and such coverage and limits shall not be deemed as a limitation of Contractor's liability under the indemnities granted to County in this Contract.

10.9.7. If Contractor fails to maintain the insurance as set forth herein, County shall have the right to purchase said insurance at Contractor's expense. Contractor agrees to reimburse County for all expenses incurred for such purchase.

10.9.8. Contractor or its agent may apply to County for approval of higher deductibles based on financial capacity and quality of the carrier affording coverage.

10.9.9. County shall have the right to prohibit Contractor or any subcontractor from performing work or services and may withhold payment until required certificates has been received and approved by County.

11. **Bonds Required.** Pursuant to Article 3, Chapter 44A and Article 8, Chapter 143 of the North Carolina General Statutes, Contractor shall furnish performance and payment bonds as herein described:
a. Contractor shall furnish and deliver to the New Hanover County a Payment Bond and a Performance Bond covering the faithful performance and completion of the work included in this Agreement and payment for all materials and labor furnished or supplied in connection with the work included in this Agreement.

b. Said bonds shall be issued and furnished to New Hanover County prior to, and as a condition precedent to, commencement of the work of this Agreement.

c. Each of the Payment Bond and Performance Bond shall be furnished on behalf of the Contractor, shall name New Hanover County obligee, and shall be in the amount of one hundred percent (100%) of the amount of the guaranteed repair and maintenance costs. Such bond(s) shall be solely for the protection of New Hanover County.

d. The Payment Bond and the Performance Bond shall be issued by a surety of financial standing having a rating from A.M. Best Company equal to or better than A X and must be included on the approved list of sureties issued by the United States Department of Treasury.

e. The bond shall remain in effect at least two (2) years after the date when final payment becomes due.

f. The surety bond must be in the form set forth in NCGS 44A-33, without any variations therefrom.

g. The Contractor shall provide surety bond wherein Surety waives notice of any and all modifications, omissions, additions, changes and advance payments or deferred payments in or about the Contract, and agrees that the obligations undertaken by the Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, and advance payments or deferred payments.

h. The surety bond must set forth no requirement that suit be initiated prior to the time stipulated in applicable North Carolina Statutes of Limitation.

12. Independent Contractor. The parties mutually agree that the Contractor is an independent contractor and not an agent of the County, and as such, the Contractor shall not be entitled to any County employment benefits, such as, but not limited to, vacation, sick leave, insurance, workmen's compensation, or pension and retirement benefits.

13. Default and Termination. If Contractor fails to prosecute the work or services with such diligence as will insure its completion within the Contract time, or if Contractor breaches any of the terms or conditions contained in this Contract and fails to cure said breach within two (2) days of County's mailing of Notice of Default, or otherwise fails to perform the work or services hereunder to the County's reasonable satisfaction, County may terminate this Contract forthwith. Upon termination, County may, without prejudice to an action for damages or any other remedy, take the prosecution of the work or services out of the hands of
Contractor. County may enter into another Contract for the completion of the Contract, or use such other methods as may be required for the completion of the Contract. County may deduct all costs of completing the Contract from any monies due or which may become due to Contractor. In the event this Contract is terminated prior to completion of the services by the Contractor, the Contractor shall be paid for work or services performed to the date of termination. In no event will the amount due Contractor in the event of termination exceed that amount set forth in this Contract. Nothing contained herein shall prevent the County from pursuing any other remedy, which it may have against Contractor, including claims for damages.

14. **Termination for Convenience.** County may terminate this Contract for convenience at any time and without cause. Upon receipt of notice, Contractor shall immediately discontinue providing the work or service and, if applicable, the placing any orders for any materials, facilities, and supplies in connection with the performance of the work or services of this Contract.

15. **Non-appropriation.** All funds for payment by County under this Contract are subject to the availability of an annual appropriation of Commissioners for the services provided under the Contract, County will terminate the Contract, without termination charge or liability, on the last day of the then-current fiscal year or when the appropriation made for then-current year for the services/items covered by this Contract is spent, whichever occurs first. If at any time funds are not appropriated for the continuance of this Contract, cancellation shall be accepted by the Contractor on ten (10) business days' prior written notice, but failure to give such notice shall be of no effect and County shall not be obligated under this Contract beyond the date of termination.

16. **Non-waiver of Rights.** The parties mutually agree that either party's failure to insist upon the strict performance of any provision of this Contract or to exercise any right based upon a breach thereof, or the acceptance of any performance during such breach, shall not constitute a waiver of any rights under this Contract.

17. **Conflict of Interest.** No paid employee of the County shall have a personal or financial interest, direct or indirect, as a contracting party or otherwise, in the performance of this Contract.

18. **Subcontracts.** The Contractor shall utilize no subcontractors for performing the work or services to be performed under this Contract without the prior written approval of the County.

19. **Entire Contract.** This Contract constitutes the entire understanding of the parties.

20. **Binding Effect.** This Contract shall be binding upon the parties hereto, and their heirs, successors, executors, administrators and assigns.
21. **Severability.** If any provision of this Contract is held unenforceable, all remaining provisions of this Contract shall remain in full force and effect.

22. **Inclusive Terms.** Use of the masculine herein shall include the feminine and neuter, and the singular shall include the plural.

23. **Governing Law.** All of the terms and conditions contained herein shall be interpreted in accordance with the laws of the State of North Carolina.

24. **E-Verify Compliance.** Pursuant to S.L. 2015-294, Contractor shall fully comply with the U.S. Department of Homeland Security employee legal status E-Verify requirements for itself and all its subcontractors. Violation of the provision, unless timely cured, shall constitute a breach of Contract.

25. **Accounting Procedures for Refund of County Sales & Use Tax.** Pursuant to G.S. 105-164.14(c), the County is entitled to a refund of sales and/or use taxes paid by contractors on purchases of building materials, supplies, fixtures and equipment that become a part of or are annexed to any building or structure that is owned or leased by the County and is being erected, altered or repaired for use by the County.

Contractor shall provide a "certified statement" containing the specific required information. The certified statement must include all of the following information:

a. the date the property was purchased;
b. the type of property purchased;
c. the cost of property purchased and the amount of sales and use taxes paid thereon;
d. the project for which the property was used;
e. if the property was purchased in this State, the county to which it was delivered; and
f. if the property was not purchased in this State, the county in which the property was used.

If the Contractor makes several purchases from the same vendor, the certified statement must indicate each invoice number, the inclusive dates of the invoices, the total amount each invoice, and the state and local sales and use taxes paid on the purchase. The statement must also include the cost of any tangible personal property withdrawn from the Contractor's warehouse stock and the amount of state and local sales or use tax paid by the Contractor. If subcontractors are used, similar certified statements by its subcontractors must be obtained by the general contractor and furnished to the County. Local sales or use taxes included in the Contractor's statements must be shown separately from the State sales or use taxes. The Contractor's statements must not contain sales or use taxes paid on purchases of tangible personal property purchased by the Contractor for use in performing the contract which does not
annex to, affix to or in some manner become a part of the building or structure that is owned or leased by the County and is being erected, altered or repaired for use by the County.

Examples of property on which sales or use tax has been paid by the Contractor and which shall not be included in the Contractor's statement are scaffolding, forms for concrete, fuel for the operation of machinery and equipment, tools, equipment, equipment repair parts and equipment rentals.

A certified statement must be provided with each pay request. If there was no sales or use tax paid during the period, the Contractor shall provide a "Zero" sales and use tax statement.

26. Notices. All notices required hereunder to be sent to either party shall be sent to the following designated addresses, or to such other address or addresses as may hereafter be designated by either party by mailing of written notice of such change of address, by Certified Mail, Return Receipt Requested:

To County:

New Hanover County Environmental Management

Attention: Kim Roane, Business Officer, 3002 U.S. Hwy 421 North, Wilmington, NC 28401

To Contractor:

27. Assignability. The parties hereto agree that this Contract is not transferable and shall not be assigned by either party without the written consent of the other party to this Contract.

IN WITNESS WHEREOF, the parties have hereunto affixed their hands and seals, the day and year first above written and by authority duly given.

NEW HANOVER COUNTY

[SEAL]

______________________________
County Manager

ATTEST:

______________________________
Clerk to the Board

CONTRACTOR

[SEAL]

______________________________
President

ATTEST:

______________________________
Secretary

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

Approved as to form:

______________________________
County Finance Officer

______________________________
County Attorney
STATE OF NORTH CAROLINA

NEW HANOVER COUNTY

I, ________________________________________, a Notary Public of the State and County aforesaid, certify that Kymberleigh G. Crowell acknowledged that she is Clerk to the Board of Commissioners of New Hanover County, and that by authority duly given and as the act of the Board, the foregoing instrument was signed in its name by its ____________________________ County Manager, sealed with its corporate seal and attested by herself as its Clerk.

WITNESS my hand and official seal, this _______ day of ____________________, 2018.

__________________________________________
Notary Public

My commission expires: ____________________

STATE OF ___________________________
________________________ COUNTY

I, _______________________________________, a Notary Public of the State and County aforesaid, certify that ____________________________ came before me this day and acknowledged that (s)he is President of ____________________________, and that by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its President.

WITNESS my hand and official seal, this _______ day of ____________________, 2018.

__________________________________________
Notary Public

My commission expires: ____________________
DIVISION 1

GENERAL REQUIREMENTS
PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. General Conditions, Supplemental Conditions, and all Divisions 1 through 44 specification sections.

B. Construction Drawings; titled “LANDFILL GAS COLLECTION AND CONTROL SYSTEM CONSTRUCTION - NEW HANOVER COUNTY LANDFILL”

1.02 PROJECT DESCRIPTION

A. The Work consists of constructing a landfill gas (LFG) collection and control system (GCCS) at the New Hanover County Landfill located at 5210 US-421, Wilmington, NC 28401 and related work as summarized below and as described in these Contract Documents and Technical Specifications.

B. Contractor shall be responsible for the means and methods and is solely responsible for the health and safety of said workers.

C. Scope of work shall include, but not limited to, the following:

   1. Landfill gas blower/flare system equipment to include, but not limited to, the following:
      a. Skid mounted landfill gas handling system.
      b. Landfill gas candlestick flare system including:
         1) Pneumatic automatic shut-off valve.
         2) Flame arrestor.
      c. Control system for the landfill gas handling and flare.
      d. 3rd Party SCADA system.
      e. Electrical and control wiring supply, installation, and equipment connection.
      f. Flow meter.
      g. Rotary Screw Air Compressor.
      h. Delivery of equipment.
      i. Three (3) day start-up, testing, and training.
      j. Two (2) year workmanship and material warranty and five (5) year equipment service and maintenance contract.

   2. CONTRACTOR shall design and manufacture gas handling equipment, flare, and controls based on criteria set forth in Specification Section 441120 and site conditions.
3. Installation of landfill gas blower/flare system and air compressor equipment.

4. Complete site work and construct reinforced concrete foundations for Blower/Flare Station and air compressor building.

5. Provide and install pre-fabricated painted metal building for new air compressor. Provide building submittal for Owner approval.

6. Provide materials, labor, and equipment for installation of LFG collection system, to include, but not limited to:
   a. Furnish, install, and pressure test new landfill gas collection piping and air and forcemain piping. All pressure testing shall be monitored and approved by the Owner or Owner’s representative.
   b. Prior to excavation, Contractor shall locate below ground utilities, piping, and landfill cap geosynthetics in the construction area. Existing utilities, piping, and cap geosynthetics shown on the Construction Drawings are approximate.
   c. Furnish and install condensate collection sumps with pneumatic pumps.
   d. Provide and install new QED wellheads on existing LFG extraction wells.
   e. Furnish and install new pneumatic pumps and pump appurtenances in existing LFG extraction wells.
   f. Roadway and surfaces disturbed during construction restored to at least their original condition.

7. Provide materials, labor, and equipment for providing electricity from nearby pole mounted transformer to new landfill gas blower/flare system and air compressor.

8. Contractor shall not demobilize from the landfill until all work has been verified to be fully complete and approved by the Owner or Owner’s designated representative.

1.03 SCHEDULE

A. After the CONTRACTOR's receipt of a Notice-To-Proceed from the OWNER, the CONTRACTOR shall complete all work within 230 calendar days from issuance of the NTP.

B. CONTRACTOR shall assume full responsibility for protection and safekeeping of equipment until installed.
1.04 GENERAL

A. The CONTRACTOR is responsible for site health and safety of his employees. CONTRACTOR shall enforce safety procedures to minimize hazards to workers, the public, and the environment.

B. Up to four (4) sets of full size Construction Drawings and Specifications shall be furnished to the CONTRACTOR at no charge.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION
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SECTION 012200
PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. The items listed below, refer to and are the same Pay Items listed on the Bid Form. They constitute the lump sum and unit cost pay items for the completion of the work. Contingency Pay Items or Alternative Pay Items may be included on the Bid Form to be added to the contract at the OWNER’s discretion should additional work be deemed necessary in meeting the goals of this project.

B. No work shall be added to the contract without an OWNER authorized written change order.

1.02 ALLOWANCES

A. CONTINGENCY ALLOWANCE

1. Included as a line item on the bid form, ten percent (10%) to be added to the subtotal price. This allowance shall be used only upon issuance of a written change order approved by the OWNER. Any unused portion remaining at the completion of the contract will revert back to the OWNER as a credit. The OWNER reserves the right to delete the contingency allowance from the Contract prior to award.

1.03 APPLICATIONS FOR PAYMENT

A. The CONTRACTOR shall submit to the ENGINEER an original itemized Application for Payment, notarized, in accordance with the General and Supplementary Conditions and Agreement between THE OWNER and CONTRACTOR, supported by such data substantiating the CONTRACTOR’S right to payment as the OWNER or ENGINEER may require, and reflecting a ten percent (10%) OWNER retainage amount. This Application for Payment will be submitted on a date and form(s) to be mutually agreed upon by the CONTRACTOR and OWNER at the preconstruction meeting.

B. Monthly Payment Applications for Lump Sum or Unit Price Items in progress shall be based on the percent complete at the end of each month as determined by the ENGINEER. During the last week of each month, the CONTRACTOR is responsible for providing the ENGINEER and OWNER with records of construction that has occurred during the month. The ENGINEER will consider the information provided by the CONTRACTOR and other information as necessary before making a determination on the percent complete on each pay item for the month (less retainage). The CONTRACTOR’s monthly payment
application should reflect the percent complete for each pay item as determined by the ENGINEER.

C. Each lump sum, unit price, and contingency bid price will be deemed to include an amount considered by the CONTRACTOR to be adequate compensation to cover the CONTRACTOR’S overhead and profit for each of the separate pay items.

D. The CONTRACTOR shall include in his Contract Sum and shall pay all County, State, and Federal Sales or Use Taxes applicable to performance of the Work. Applications for Payment shall be accompanied by a North Carolina Local Sales or Use Tax Statement. This statement shall be submitted on the forms provided by the OWNER and shall show the North Carolina Sales Tax and OWNER Tax paid. It shall list any payments made directly to the North Carolina Department of Revenue related to this project. If no sales tax has been paid, “NONE” shall be entered on the statement form.

E. When requesting payment for materials stored, Payment will be made for up to ninety percent (90%) of invoice amount only for the stored materials. No payment will be made for anticipated overhead and profit. Requests for payment for materials stored shall be accompanied by the Supplier’s invoices, or other indications of the value of the stored materials, satisfactory to the OWNER.

F. OWNER reserves the right to reject CONTRACTOR's measurement of work-in-place that involves use of established unit cost bid prices, and to have this work measured by an independent method at the OWNER'S expense.

1.04 PAY ITEMS

A. LUMP SUM

1. A lump sum price is an amount proposed by the CONTRACTOR and stated on the Bid Form as a price where measurement will not be made for payment for materials, services and/or work identified in the plans and specifications for a particular pay item.

2. CONTRACTOR will not be entitled to any adjustment in a lump sum bid price as a result of any change caused by a variation in quantities as a result of more accurate measurements. CONTRACTOR agrees to accept the aforesaid lump sum bid price as complete and total compensation for all work to be performed under a lump sum pay item.

3. Lump sum prices include all necessary material, labor, equipment, overhead, profit and applicable taxes.
B. UNIT PRICES

1. Unit Quantities: Quantities and measurements indicated in the Bid Form are for contract purposes only. Quantities and measurements supplied or placed in the Work shall determine payment.

2. When actual Work requires change in quantity than those quantities indicated on the Bid Form, OWNER or CONTRACTOR may claim for Contract Price adjustment.

ITEM 1 - MOBILIZATION AND DEMOBOILIZATION

1. Basis of Measurement: By lump sum (LS). Not to exceed 5% of the total contract price.

2. Basis of Payment: Includes mobilization and demobilization for the project, any temporary facilities and controls, and any incidentals in completing the project.

ITEM 2 - BONDS AND INSURANCE

1. Basis of Measurement: By lump sum (LS). Not to exceed 3% of the total contract price.

2. Basis of Payment: Includes costs for acquiring bonds and insurance for the project.

ITEM 3 - ELECTRICAL


2. Basis of Payment: Includes all costs to furnish and install all electrical and control wiring, conduits, panels, site lighting, and equipment for complete and operational system.

ITEM 4 - LANDFILL GAS BLOWER SKID AND FLARE


2. Basis of Payment: Includes all costs to design, manufacture, deliver, and install a landfill gas blower/flare system. Includes system piping, attachment to new landfill gas collection system, site work, 3-day start-up, testing and training, 2-year warranty, and 5-year service and maintenance. Site work includes rough and finish grading, construction of equipment concrete pads, and gravel paving.
ITEM 5 - AIR COMPRESSOR


2. Basis of Payment: Includes the purchase, delivery, and installation of an air compressor and pre-fabricated metal building enclosure. Includes the construction of a concrete slab for the building.

ITEM 6 - LANDFILL GAS COLLECTION PIPING AND FITTINGS


2. Basis of Payment: Includes the purchase and installation of high density polyethylene piping and fittings in varies sizes. Installation includes trenching and soil backfilling with soil provided from off-site source.

ITEM 7 - LANDFILL GAS LIQUIDS MANAGEMENT AIR AND FORCEMAIN PIPING AND FITTINGS

1. Basis of Measurement: By linear foot (LF) and each (EA).

2. Basis of Payment: Includes the purchase and installation of high density polyethylene piping, fittings, and cleanouts in varies sizes and valve vault. Installation includes trenching and soil backfilling with soil provided from off-site source.

ITEM 8 - VALVES


2. Basis of Payment: Includes the purchase and installation of landfill gas collection and air and forcemain valve assemblies in varies sizes and locations. For LFG collection wellhead valve assembly, includes UV resistant flexible hose and couplings and 6-inch riser pipe and connection to gas collection pipe.

ITEM 9 - CONDENSATE SUMP INCLUDING PNEUMATIC PUMP


2. Basis of Payment: Includes the purchase and installation of high density polyethylene landfill gas collection sump. Includes the supply and installation of a pneumatic pump in the sump and incidentals for a complete and operational liquids collection sump.
ITEM 10 – LANDFILL GAS EXTRACTION WELL PNEUMATIC PUMP INCLUDING DUAL EXTRACTION WELL CAP, HOSING, AND FITTINGS


2. Basis of Payment: Includes the purchase and installation of a pneumatic pump in an existing landfill gas extraction well. Includes the supply and installation of dual extraction well cap, piping, tubing, fittings, stainless steel cable, valves, air pressure regulator, and incidentals for a complete and operational pump.

ITEM 11 – LANDFILL GAS EXTRACTION WELL CONNECTION TO COLLECTION PIPING, INCLUDES NEW WELLHEAD


2. Basis of Payment: Includes the purchase and installation of 2-inch LFG wellhead assembly on an existing LFG extraction well. Includes UV resistant flexible hose and couplings.

ITEM 12 – CONNECTION TO VENTILATION RISERS


4. Basis of Payment: Includes the purchase and installation of 2-inch LFG wellhead assembly on an existing LFG ventilation riser pipe. Includes UV resistant flexible hose and couplings.

ITEM 13 – REMOTE WELLHEAD


2. Basis of Payment: Includes the purchase and installation of 2-inch LFG wellhead assembly and 6-inch diameter gas collection lateral and riser piping. Includes UV resistant flexible hose and couplings for the wellhead and connection to either a leachate cleanout or gas collection pipe.

ITEM 14 – RESTORATION


2. Basis of Payment: Includes restoring areas disturbed during construction to at least its original condition. This includes providing and installing gravel for roadways and vegetating surfaces with grass.
ITEM 15 – SURVEYING AND RECORD DRAWINGS


2. Basis of Payment: Includes services by a North Carolina licensed surveyor for construction, pay applications, and as-built surveying and for providing as-built drawings and documents.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION
SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after the award of the Contract.

1.02 DEFINITIONS

A. Definitions used in this Section are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by CONTRACTOR after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:

1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.

2. Revisions to Contract Documents requested by the OWNER or ENGINEER.

3. CONTRACTOR's determination of and compliance with governing regulations, codes, and orders issued by governing authorities.

1.03 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution will be considered if received within 30 days after issuance of the Notice to Proceed. Requests received more than the 30 days may be considered or rejected at the discretion of the ENGINEER.

1. Submit three (3) copies of each request for substitution for consideration.

2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
b. Samples, where applicable or requested.
c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified.
d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the OWNER and separate CONTRACTORS that will become necessary to accommodate the proposed substitution.
e. A statement indicating substitution's effect on the CONTRACTOR's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
f. Cost information, including a proposal of the net change, if any in the Contract Sum.
g. Certification by the CONTRACTOR that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the CONTRACTOR's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.

B. ENGINEER's Action: Within 14-days of receipt of the request, the ENGINEER will notify CONTRACTOR of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

A. Conditions: CONTRACTOR's substitution request will be received and considered by the ENGINEER when one or more of the following conditions are satisfied, as determined by the ENGINEER; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.

2. Proposed changes are in keeping with the general intent of Contract Documents.

3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.

5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

6. A substantial advantage is offered the OWNER, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the OWNER may be required to bear. Additional responsibilities for the OWNER may include additional compensation to the ENGINEER for redesign and evaluation services, increased cost of other construction by the OWNER or separate CONTRACTORS, and similar considerations.

7. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the CONTRACTOR certifies that the substitution will overcome the incompatibility.

8. The specified product or method of construction cannot be coordinated with other materials, and where the CONTRACTOR certifies that the proposed substitution can be coordinated.

9. CONTRACTOR's submittal and ENGINEER's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

**PART 3 - EXECUTION**

Not Applicable.

**END OF SECTION**
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SECTION 013300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Project meetings.
B. Submittal procedures.
C. Construction progress schedules.
D. Proposed products list.
E. Product data.
F. Shop drawings.
G. Samples.
H. Certificates.
I. Manufacturer’s instructions.
J. Health and Safety Plan.
K. Record documents.

1.2 PROJECT MEETINGS

A. A pre-construction conference will be scheduled as soon as practicable after the award of the contract. The CONTRACTOR shall attend the conference along with anticipated major Subcontractors. During this conference, the CONTRACTOR shall submit a list of anticipated Subcontractors and major material suppliers, a proposed construction schedule, and a statement of anticipated monthly progress payments showing the percent of progress each month. The CONTRACTOR shall also provide at least two local telephone numbers that may be used to contact the CONTRACTOR or his authorized representative in the event of an emergency after normal business hours. The CONTRACTOR shall also have his prospective job Superintendent attend the pre-construction conference.

B. The CONTRACTOR shall attend all progress meetings for the purpose of informing the OWNER and the ENGINEER regarding the status of the project. A person authorized to act on behalf of the Subcontractor shall be present. Each representative shall be thoroughly familiar with the status of the project and shall
be prepared to discuss and act upon any situations that may arise. The time, date and location of these meetings will be established during pre-construction conference. The GENERAL CONTRACTOR shall provide an updated job progress schedule at each weekly meeting.

1.3 SUBMITTAL PROCEDURES

A. CONTRACTOR shall develop and distribute project submittals in accordance with procedures specified herein. The required submittals include, but are not limited to the following:

1. Construction progress schedules.
2. Proposed products list.
3. Product data.
4. Shop drawings.
5. Samples.
6. Certificates.
7. Manufacturer's instructions.
9. Record Documents.

B. Transmit each submittal with ENGINEER accepted form.

C. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.

D. Identify Project, CONTRACTOR, Subcontractor and Supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.

E. Apply CONTRACTOR’s stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.

F. Identify variations from Contract Documents and product or system limitations, which may be detrimental to successful performance of completed Work.

G. When revised for resubmission, identify changes made since previous submission.

H. Submittals not requested will not be recognized or processed.
1.4 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate within 10 days after date of OWNER-CONTRACTOR Agreement. After review, resubmit required revised data within 10 days.

B. Submit revised Progress Schedules as needed.

C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.

D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

1.5 PROPOSED PRODUCTS LIST

A. Within 15 days after date of OWNER-CONTRACTOR Agreement, 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, give manufacturer, trade name, model or catalog designation, and reference standards.

1.6 PRODUCT DATA

A. Product Data for Review:

1. Submitted to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700.

B. Product Data for Information: Submitted for the ENGINEER’S knowledge as contract administrator or for the OWNER.

C. Product Data for Project Closeout: Submitted for the OWNER’S benefit during and after project completion.

D. Submit the number of copies required by the CONTRACTOR, plus two copies which will be retained by the ENGINEER. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers’ standard data to provide information specific to this Project.

E. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
1.7 SHOP DRAWINGS

A. Provide a minimum of four (4) copies.

B. Shop Drawings for Review:
   1. Submitted to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
   2. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700.

C. Shop Drawings for Information to be submitted for the ENGINEER’S knowledge as contract administrator or for the OWNER.

D. Shop Drawings for Project Closeout to be submitted for the OWNER’S benefit during and after project completion.

E. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

F. Submit the number of opaque reproductions which CONTRACTOR requires, plus two (2) copies which will be retained by ENGINEER.

1.8 SAMPLES

A. Samples for Review: Submitted to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

B. Samples for Information: Submitted for the ENGINEER’S knowledge as contract administrator or for the OWNER.

C. Include identification on each sample, with full Project information.

D. Submit the number of samples specified in individual specification sections; one of which will be retained by ENGINEER.

E. Reviewed samples which may be used in the Work are indicated in individual specification sections.

F. Samples will not be used for testing purposes unless specifically stated in the specification section.
1.9 CERTIFICATES

A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the CONTRACTOR to ENGINEER, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to ENGINEER.

D. Notarized written certification that the foundation meets the requirements for the new scale.

1.10 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to ENGINEER for delivery to OWNER in quantities specified for Product Data.

B. Indicate special procedures, parts list, spare parts to be kept on hand, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.11 HEALTH AND SAFETY PLAN

A. CONTRACTOR shall develop a Health and Safety Plan, which specifically addresses the Work to be performed, in accordance with OSHA and North Carolina OSHA requirements for general construction safety. The Health and Safety Plan shall include provisions which anticipate possible exposure to solid waste materials and other related conditions during construction.

B. CONTRACTOR and any Subcontractor shall be solely responsible for the health and safety of their employees.

1.12 RECORD DOCUMENTS

A. Submit record documents in accordance with Section 01700.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION
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PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Construction facilities required for the construction of the permanent facilities specified under the Work of this Contract.

B. Construction facilities include furnishing of all equipment, materials, tools, accessories, incidentals, labor, and performing all work for the installation of equipment and for construction of facilities, including their maintenance, operation, and removal, if required, at the completion of the Work under the Contract.

C. Temporary Utilities:
   1. Temporary electricity.
   2. Temporary water service.
   3. Temporary sanitary facilities.

D. Construction Facilities:
   1. Parking.
   2. Progress cleaning and waste removal.

E. Temporary Controls:
   1. Barriers.
   2. Pollution control.

F. Removal of utilities, facilities, and controls.

1.2 TEMPORARY UTILITIES

A. Temporary Electricity.
   1. Electricity shall be provided (if deemed necessary) on a temporary basis by connection to existing on-site electrical service. The Owner shall be responsible for usage costs incurred in providing temporary electrical service until substantial completion.
B. Temporary Water Service.

1. Water will be made available to the Contractor by the County through the use of existing on-site hose bibb valves, yard hydrants, or fire hydrants. The water usage for the project will be paid for by the County. The Contractor shall use a backflow prevention assembly when connected to the Owner’s fire and yard hydrants.

C. Temporary Sanitary Facilities.

1. Provide and maintain required facilities and enclosures (if deemed necessary). Existing facility use is not permitted. Provide facilities at time of project mobilization.

2. Sanitary arrangements shall include water closet facilities acceptable to the local Health Department and shall be kept in a sanitary condition at all times. These facilities shall be available to all workers on the job.

1.3 CONSTRUCTION FACILITIES

A. Parking.

1. Arrange for and/or provide temporary parking areas to accommodate construction personnel.

2. Locate as approved by Owner.

3. When site space is not adequate, provide additional off-site parking.

4. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.

B. Progress Cleaning and Waste Removal

1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

1.4 TEMPORARY CONTROLS

A. Barriers

1. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
B. Pollution Control

1. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

2. Comply with pollution and environmental control requirements.

1.5 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials, prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2- PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION
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SECTION 017700
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION

CONTRACTOR shall provide all labor, materials, equipment and incidentals necessary to close-out the project as specified herein.

1.2 SECTION INCLUDES

A. Closeout procedures.
B. Final cleaning.
C. Testing, adjusting, and balancing.
D. Protecting installed construction.
E. Project record documents.
F. Product warranties and product bonds.

1.3 CLOSEOUT PROCEDURES

A. Certificate of Substantial Completion will not be issued until OWNER has been provided with written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for OWNER and ENGINEER’S review.

B. Certificate of Substantial Completion will not be issued until OWNER has been provided with written certification from the CONTRACTOR that work is complete and ready for system operation.

C. Final Application for Payment shall be accompanied by the following documents:
   1. Construction Record Drawings (reproducible).
   2. Notarized written certification that the foundation meets the requirements for the new scale.
   3. Guarantees of all materials and workmanship.
   4. CONTRACTOR and SUBCONTRACTORS Affidavit, Release, and Waiver of Claims.
5. Consent of Surety (if applicable).
6. Final State/County Sales/Use Tax Statement.
7. Complete list of all subcontractors and areas of work performed.
8. Proof of Compliance with Building Standards (if applicable).
9. MWBE Documentation of Final Contract Payments (if applicable).

1.4 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.
B. Clean site; sweep paved areas, rake and clean landscaped surfaces.
C. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.5 TESTING, ADJUSTING AND BALANCING

A. Reports will be submitted, by independent firm or OWNER, to ENGINEER indicating observations and results of tests and indicating compliance or non-compliance with requirements of Contract Documents.

1.6 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.
B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

1.7 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed Shop Drawings, Product Data, and Samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by OWNER.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings: Legibly mark each item to record actual construction including:
   1. Measured thickness and extents of materials
   2. Field changes of dimension and detail.
   3. Details not on original Construction Drawings.

1.8 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.

B. Verify documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Submit prior to final Application for Payment.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION
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SECTION 017900

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Startup certifications are required for the Landfill Gas Blower/Flare System, air compressor, and pneumatic pumps. Certifications include the Manufacturer’s Check-Out Certification and the Demonstration Certification. The CONTRACTOR shall satisfy the requirements of these certifications as specified herein.

B. Related Work Described Elsewhere:

1. Construction Drawings
2. Section 441120 - Landfill Gas Blower/Flare System Equipment
3. Section 431251 - Rotary Screw Air Compressor

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 PRELIMINARY MATTERS

A. Startup Certification: Prior to system startup, successfully complete all testing required of the individual components. Complete and submit three (3) copies of the attached “Manufacturer’s Check-Out Certification” form. An alternate form can be used with prior authorization by the ENGINEER. The submitted copies shall have signatures of the CONTRACTOR, the Subcontractor (if involved), and the Manufacturer’s representative (if involved). All copies shall be provided with the respective Operation and Maintenance Manual. This form and the O&M Manual shall be submitted prior to providing operational training to the OWNER and prior to conducting the final inspection.

B. Demonstrate to the ENGINEER that all temporary jumpers and/or bypasses have been removed and that all components are operating under their own controls as designated.

C. Coordinate startup activities with the OWNER and with the ENGINEER prior to commencing system startup.
3.02 STARTUP

A. Confirm that all equipment is properly energized and that all switches are set to their normal operating condition.

B. Initiate startup in accordance with the startup sequence. This startup sequence shall follow, exactly, the sequence in the submitted operation and maintenance manual.

C. Observe individual component operations and make adjustments as necessary to optimize the performance of the Work.

D. Coordinate with the OWNER and ENGINEER before performing any adjustments that may disturb other landfill operations.

3.03 DEMONSTRATION AND TESTING

A. After all work components have been constructed, field tested, and started-up in accordance with the individual specifications and manufacturer requirements, perform the demonstration and testing in the presence of the ENGINEER and the OWNER. The demonstration shall be held upon completion of all systems at a date to be agreed upon in writing with the OWNER.

B. The demonstration and testing shall be conducted for three (3) consecutive days. The Work must operate successfully throughout the three-day testing period in the manner intended. If the Work does not operate successfully, the problems shall be corrected, and the three-day test shall be restarted to Day 1.

C. Acceptability of the Work’s performance will be based on the work performing as specified in the Contract Documents, either under actual or simulated operating conditions as approved by the ENGINEER. The intent of the demonstration and testing is for the CONTRACTOR to demonstrate to the OWNER and the ENGINEER that the Work will function as a completed and operable system under normal as well as emergency operating conditions and is ready for acceptance.

D. In conjunction with the demonstration and testing, the CONTRACTOR shall provide a training session or sessions to adequately instruct designated operating personnel on system startup, operations, shutdown, and other essential features of the system equipment. The training shall detail the function of the various systems and system components and their relationships to each other. In addition, system operations under all alarm conditions shall be demonstrated; some of these alarm conditions may be simulated (e.g., via electrical jumpers) for training purposes. Prior to the substantial completion, the CONTRACTOR shall submit for approval, a detailed agenda for the training sessions and the experience of the person(s) conducting the training. Training shall be conducted on a weekday following the completion of startup testing (see Paragraph 3.03 B) at a mutually agreed upon time during normal business hours.
E. Demonstration Certification: Complete and submit three (3) copies of the attached “Demonstration Certification” form. An alternate form can be used with prior authorization by the ENGINEER. The submitted copies shall have signatures of General CONTRACTOR, the Subcontractor (if involved), and the Manufacturer’s representative (if involved). All copies shall be provided with the respective Operation and Maintenance Manual.
MANUFACTURER’S CHECK-OUT CERTIFICATION

___ OWNER: _______________________
___ ENGINEER: _______________________
___ CONTRACTOR: _______________________  Check-out

Check-out Memo No. _____

PROJECT DATA

NAME: __________________________

LOCATION: _______________________

DRAWING #: _______________________

SPECIFICATION: _______________________

SECTION: _______________________

OWNER: __________________________

CONTRACT DATA

NUMBER: _______________________

DATE: _______________________

DRAWING #: _______________________

SPECIFICATION: _______________________

SECTION: _______________________

OWNER: __________________________

Name of equipment checked: ____________________________________________

Name of manufacturer of equipment: ______________________________________

1. The equipment furnished by us has been checked on the job by us. We have reviewed where applicable) the performance verification information submitted to us by the Contractor.

2. The equipment is properly installed, except for items noted below.*

3. The equipment is operating satisfactorily, except for items noted below.*

4. The written operating and maintenance information (where applicable) has been presented to the Contractor, and gone over with him in detail. Five (5) copies of all applicable operating and maintenance information and parts lists have been furnished to him for insertion in each of the Equipment Brochures.

Checked By: __________________________

Name of Manufacturer’s Rep.            Name of General Contractor

Address and Phone No. of Rep.               Authorized Signature/Title/Date

Signature/Title/Person Making Check            Name of Subcontractor

Date Checked            Authorized Signature/Title/Date
* Manufacturer’s Representative Notations - Exception noted at time of check were:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Manufacturer’s Representative to note adequacy of related equipment that directly affects operation, performance or function of equipment checked. (No comment presented herein will indicate adequacy of related systems or equipment):

________________________________________________________________________

________________________________________________________________________

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**DEMONSTRATION CERTIFICATION**

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**NOTE TO CONTRACTOR:**
Submit five (5) copies of all information listed below under (a) and (b) for review at least one week before scheduled demonstration of the work. After all information has been approved by the ENGINEER, give the OWNER a Demonstration of Completed Systems as specified and have the OWNER sign five (5) copies of this form. After this has been done, a written request for a final inspection of the system shall be made.

**MEMORANDUM:**
Approval of this certificate indicates that the OWNER has been given a Demonstration of Completed Systems on the work covered under this Specification Section. Operation of the overall system and of major equipment items were described and demonstrated. The following items were given to the OWNER:

(a) OWNER’s 5 copies of Operation and Maintenance Manual for equipment or systems specified under this section containing approved submittal sheets on all items, including the following:

1. Maintenance information published by manufacturer on equipment items.
2. Printed warranties by manufacturers on equipment items.
3. Check-Out Certification on equipment signed by manufacturer’s representative.
4. Written operating instructions on any specialized items.
(5) Explanation of guarantees and warranties on the system.

(b) Record drawing showing as-built conditions.

(c) A demonstration/training session presenting system operation and maintenance procedures.

________________________________________________________________________________
(Name of Contractor)

By: __________________________________________________________
(Authorized Signature, Title & Date)

________________________________________________________________________________
(Name of Subcontractor)

By: __________________________________________________________
(Authorized Signature, Title & Date)

Received the following: Operations and Maintenance manual, as-built drawings, demonstration and instructions on system operation

________________________________________________________________________________
(Owner)

By: __________________________________________________________
(Authorized Signature, Title & Date)

END OF SECTION
SECTION 033000
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. The CONTRACTOR shall provide all labor, materials, equipment and incidentals required to install complete and ready for use the following concrete structures as specified herein and as indicated on the Construction Drawings:

1. Flare Pad
2. Blower Skid Pad
3. Aboveground Pipe Supports
4. Air Compressor Building Pad
5. Propane Tank Pad

B. Related Work Described Elsewhere:

1. Construction Drawings
2. Section 312000 – Earth Moving

1.02 QUALITY ASSURANCE

A. Provide manufacturer's certificate that materials meet or exceed minimum requirements as specified.

B. Guarantee concrete slab for one (1) year against becoming unserviceable, cracked or objectionable in appearance as a result of being defective and/or nonconforming, after acceptance of the project.

1.03 STANDARDS

A. Comply with applicable as well as specified provisions and recommendations of ASTM and ACI standards.

PART 2 - MATERIALS

2.01 CONCRETE

A. Concrete shall be ready mix conforming to ASTM C-94. Cement shall be portland cement conforming to ASTM C-150, Type II. All concrete shall be air-
entrained with air content between 4 and 5 percent. Concrete shall have a 28-day compressive strength not less than 4,000 psi, with a maximum slump of 5 inches.

B. Fly Ash (Do not use for precast concrete): ASTM C618, Class F.
C. Concrete Grout: Non-shrink and non-metallic grout with a minimum compressive strength of 6,500 psi at 28-days.

2.02 REINFORCEMENT

A. Reinforcing bars shall be deformed bars conforming to ASTM A615-Grade 60.
B. Welded wire fabric shall conform to ASTM A185. Minimum yield strength of 65,000 psi.

2.03 CHAIRS, RUNNERS, BOLSTERS, SPACERS, AND HANGERS:

A. Comprised of stainless steel, epoxy coated, or plastic coated metal.

2.04 ANCHOR BOLTS

A. Anchor bolts shall be galvanized or zinc coated carbon steel conforming to ASTM A325 or as shown on the Construction Drawings.

PART 3 - EXECUTION

A. Formwork, concrete placement, protection, and curing shall be in conformance with ACI 318. The concrete surface shall be broom finished.

END OF SECTION
DIVISION 11

EQUIPMENT
SECTION 112170
CONDENSATE SUMPS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: The CONTRACTOR shall provide all equipment, materials, and labor needed to install prefabricated condensate sumps as specified herein and as indicated on the Drawings.

B. Related Work Described Elsewhere:
   1. Construction Drawings
   2. Division 31 - Earthwork
   3. Division 33 - Utilities

1.02 SUBMITTALS

A. The CONTRACTOR shall prepare and submit to the ENGINEER, for review and approval, three (3) copies of catalog cuts on materials furnished; shop drawings showing dimensions, materials, and configuration of the sump assemblies; structural or buoyancy calculations sealed by a professional engineer registered in one of the 50 states; test results; and manufacturers’ information and instructions pertaining to the storage, handling, installation, and inspection of the assemblies.

PART 2 - PRODUCTS

2.01 SUMP

A. The sumps shall be fabricated of PE 340B Extra High Molecular Weight (EHMW) High Density Polyethylene (HDPE) Cell Class 345444C, or equal. Tank walls, top, and bottom shall be designed and fabricated to withstand the following pressures and forces:

1. A vacuum (negative pressure) of 60 inches of water.
2. Resistance to a buoyancy force of eight feet of water.
3. The earthen backfill will create the equivalent of 35 pcf of fluid pressure.
4. The forces and impacts that typically occur in loading, unloading, shipping, handling at the job site, and installation.
B. Joints shall be fused for their entire lengths. The complete sump shall be airtight, air-tested in the factory and results provided. Air testing shall be at 5 psig for a minimum of 1-hour. There shall be no pressure drop except for what can be documented for an air temperature difference.

2.02 APPURTENANCES

A. Appurtenances such as the pipe stub-outs, access manway, and interior piping, shall be fabricated of like material or compatible HDPE material.

PART 3 - EXECUTION

3.01 EXCAVATION AND BACKFILL

A. Excavation, temporary sheeting, shoring, and bracing, and backfill shall comply with Division 31 specifications and the Construction Drawings.

B. According to site information, groundwater is within the sump excavation.

C. Excavated soil material can be used to backfill around the installed sump.

D. Backfill shall be compacted in 1-foot lifts using suitable equipment approved by the ENGINEER.

3.02 INSTALLATION

A. The sump assembly shall be placed on a minimum of 6 inches of NCDOT #57 stone.

B. The CONTRACTOR shall use care in handling and installing the sump assemblies, and in backfilling so as to avoid damage. The CONTRACTOR shall be responsible for repairing any damage. Installation shall comply with the manufacturers’ recommendations and approved by the ENGINEER.

3.03 TESTING

A. Air pressure tested at the factory, and air-test results provided. Air testing shall be at 5 psig for a minimum of 1-hour. There shall be no pressure drop except for what can be documented for an air temperature difference.

END OF SECTION
PART 1 - GENERAL

1.01 SCOPE

A. Furnish and install electrical wiring, systems, equipment, fixtures, and accessories in accordance with the specifications and drawings and in compliance with the State Building Code and National Electric Code (NEC), latest edition, and local authority having jurisdiction.

B. CONTRACTOR or its subcontractor shall be competent in electrical work and licensed in the State of North Carolina as an electrical contractor.

C. Aluminum conductors are not permitted.

D. CONTRACTOR shall coordinate all work with that of other trades, and shall coordinate all equipment and device locations with the OWNER and ENGINEER, and other Contractors where applicable. CONTRACTOR shall coordinate field measurements, equipment and device sizes, and locations in the field prior to start of work, such that rework will not be required due to lack of coordination.

E. CONTRACTOR shall coordinate service entrance requirements with Utility and shall pay all fees required to obtain electrical power; fees required for this upgrade shall be included in the project cost. CONTRACTOR shall coordinate with the OWNER, Utility, and site to verify paths and entrances for overhead and underground facility cabling systems.

F. CONTRACTOR shall provide completely enclosed raceway for control systems. Additionally for control systems, CONTRACTOR shall provide all interconnecting cabling as required to achieve the specified and indicated operations.

G. CONTRACTOR shall coordinate with OWNER and equipment and manufacturer’s specific electrical ratings, and site to locate, install, and connect electrically powered or controlled equipment, devices, and processes as identified and as encountered during the construction process, prior to rough-in.

1.02 REFERENCE

A. Division 0 and 1

B. Section 431251 – Rotary Screw Air Compressor

C. Section 441120 – Landfill Gas Blower/Flare System Equipment
D. Construction Drawings

1.03 CODES AND REGULATIONS

A. Comply with the latest editions of the following; including all supplements thereto, all Laws and Regulations of any authority having jurisdiction over the electrical work.

1. State and Local Codes
2. National Electric Code (NEC)
3. National Fire Protection Association (NFPA)
4. Factory Mutual (FM)
5. Underwriters Laboratories (UL)
6. Occupational Safety and Health Administration (OSHA)
7. National Electrical Manufacturers Association (NEMA)
8. ASTM

B. Whenever drawings or specifications require materials, workmanship, arrangement or construction of higher standard or larger size than is required by Codes and Regulations, then drawings and specifications shall take precedence. Likewise, whenever drawings or specifications require materials, workmanship, arrangement or construction of lower standard or lower size than is required by Codes and Regulations, then the Codes and Regulations shall take precedence.

C. All electrical materials and equipment shall bear the label of Underwriter Laboratories, listed by them in their list of electrical fittings; and approved by them for the purpose for which they are intended to be used, unless material and equipment is of a type for which Underwriters Laboratories do not list or provide a label. Panels shall bear U.L. labels.

1.04 QUALITY ASSURANCE

A. Use an adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. References to the National Electric Code (NEC), Underwriters Laboratories, Inc. (UL), and National Fire Protection Association (NFPA) are a minimum installation requirement standard. Design drawings, OWNER requirements, and
other specification sections shall govern in those instances where requirements are greater than those specified in NEC.

C. All equipment shall be UL labeled or composed of UL labeled components.

D. All equipment shall be the manufacturer’s new and current item. All similar or associated items shall be provided by the same manufacturer, and where practical, shall be the same model.

1.05 SUBMITTALS

A. Manufacturer’s specifications, ratings, physical dimension, catalog cuts, and other data needed to prove compliance with the specified requirements.

B. Data shall be submitted together as one package, with project name identified: data shall be bound with all associated items grouped together: identification shall be given to each item such that it clearly matches equipment, fixtures, or devices of contract drawings; and labels as required to clearly identify the intended use and/or location for each item.

C. Comply with the pertinent provisions of Division 0 and Division 1.

D. Test Data: CONTRACTOR shall provide to ENGINEER the results of service entrance ground resistance tests, to identify resistance less than 20 ohms at grounded connection.

E. Shop Drawings

1. Detailed panel layout and electrical diagrams showing the panel enclosure, panel face and wiring diagrams for approval prior to fabrication. Detailed wiring diagrams shall include point-to-point wiring information, including a wire and terminal numbering system. Field connections shall be clearly denoted. Submit detailed layout of panel face and internals. Detailed layout shall include the location of each control and electrical component including relays, transformers, panel displays, controllers, breakers, heaters and other required items.

2. Submit supplier’s product data for all controls and electrical components including:

   a. Panel displays
   b. Recorders
   c. Relays
   d. Power conditioners
e. Control power transformers
f. Panel heaters and fans
g. Circuit breakers
h. Switches, pushbuttons, lights, strobe warning lights, etc.
i. Panel enclosures
j. Other electrical components as specified in other Sections
k. Floats, switches, intrinsically safe barriers and other high level detection devices.

3. Piping and Instrumentation Diagram (P&ID)

1.06 PRODUCT HANDLING

A. Comply with the pertinent provisions of Division 0 and Division 1, and handle electrical items per manufacturer’s instructions. Protect PVC conduit from sunlight. Maintain manufacturer packaging on all materials until immediately prior to installation. Damaged equipment, devices, or fixtures shall not be installed, but shall be replaced and installed as new.

PART 2 - MATERIALS

2.01 GENERAL

A. All fixtures, devices, and components shall be specification grade products where available. Provide weatherproof NEMA 4X construction and installation where located in exterior locations or in wet areas; standard (general) NEMA 1 type materials and installation where located in indoor dry locations such as interior of cabinets and enclosures. Sizes, wattages and other specifics are detailed on the Construction Drawings and Specifications. Each item’s style, color, wattage, voltage, and feature shall be approved by the ENGINEER prior to procurement of materials.

B. Fasteners. Bolts, nuts, and washers shall be stainless steel.

2.02 DISCONNECT (SAFETY SWITCHES)

A. FUSIBLE SWITCH:

1. Provide quick-make, quick break type in accordance with UL98, NEMA KS 1 and NEC, capable of accepting UL and NEMA standard fuses. Use Class R fuses without lockout kit where AIC is greater than 10K AIC.
2. Switch shall have: copper blades, visible in the OFF position, an arc chute for each pole; external operation handle indication ON and OFF positions and having lock-open padlocking provisions. Provide mechanical interlock capable of only allowing opening of the door when the switch is in the OFF position and opening by a special tool to permit inspection.

3. Provide with fuse mounting for the size and type of fuses specified by equipment manufacturer. Furnish switches completely fused. Furnish a set of six spare fuses for each type, rating, and size of fuse installed. Deliver the fuses to the OWNER prior to the final inspection.

4. Provide solid neutral assembly for each switch being installed in a circuit which includes a neutral conductor.

5. Enclosures shall be NEMA type 4X.

6. Switches shall be heavy duty, Type HD, and service entrance or horsepower rated and labeled where required. Where used at service entrance, switch shall be labeled as suitable for use as service entrance equipment.

2.03 CONDUITS, RACEWAYS, AND SUPPORTS

A. GENERAL:

1. All above grade raceway shall be RGS, sized as required or indicated, and shall be run concealed below slab wherever possible to limit exposed conduits on wall areas; coordinate all power and control work prior to concrete pour to minimize rework due to forgotten conduits. Provide PVC-coated RGS style conduit, having minimum of 4 mil coating of corrosive resistant PVC; utilize fittings with same PVC coating throughout these areas. Conduit shall be a minimum of 1-inch size.

B. BELOW GRADE:

1. Conduit below grade and below or in slab shall be heavy wall PVC type. Underground conduit shall be sized per NEC except using 1-inch as a minimum size, shall be concrete-encased where below paved or roadway areas, and shall be 24-inches minimum below grade. At each wall or slab penetration where conduit in soil, or otherwise below grade, enters an air-filled space, provide a drainable conduit seal fitting, full size of conduit, in an accessible location within 18 inches of the penetration.

C. VIBRATION:

1. At all connections to motorized equipment, fixture ballasts, valves, and equipment subject to vibration, install an 18 inch section of liquid tight
flexible conduit same size as adjoining conduit; in areas requiring NEMA 4X conduit, utilize NEMA 4X flexible fittings. Ensure compliance with grounding requirements of NEC and provide a separate full length grounding conductor.

2.04 PANELBOARDS

A. Panelboards shall be rated as indicated, copper bussing, 42 spaces or as indicated, 20-inch wide cabinet unless otherwise noted, surface-mounted NEMA 4X enclosure as indicated, complete with locking cover, door with document holder, equipment grounding kit, solid neutral assembly, typed circuit breaker director, and branch breakers. Provide model NF or NQOD as manufactured by Square D or equal. Coordinate AIC rating with Utility prior to purchase; where Utility cannot provide ample information in a timely manner, use minimum of 65,000 AIC for panels and breakers at service entrance, and use minimum of 22,000 AIC for panels and breakers located downstream.

B. Provide bolt-on circuit breakers to yield circuits as indicated; provide with filler plates in all unused spaces. Verify electrical ratings and requirements of each circuit, piece of equipment, mechanical device, and load prior to finalizing panelboard circuit breaker selection and installation, such that all breakers and cables are sized per NEC. Utilize SWD type breakers for un-switched lighting loads, and HCR type breakers for all HVAC equipment loads.

2.05 ELECTRICAL IDENTIFICATION

A. Provide preprinted, permanent ink wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes and at load connections. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number as identified on equipment conductors, and provide the identification in a manner and sequence that matches an approved drawing of the involved wiring.

B. Provide engraved three layers laminated plastic, white letters on black background on each panelboard, process control element; disconnect switch, motor starter, and other major electrical equipment piece. Identify equipment designation and voltage rating in ¼ inch high letters.

C. Provide typed breaker schedule in each panelboard; adjust and correct breaker designations on the directory for any changes during installation; retype to leave OWNER with a fully typed final version in each panelboard.

D. Provide underground plastic warning tape 3-inch wide, with “ELECTRIC” warning permanently imprinted, directly above and for full length of each underground conduit. Provide a depth of 8 inches below grade.
2.06 GROUNDING SYSTEM

A. CIRCUIT:

1. Provide separate green grounding wire in conduit of each branch and feeder circuit. Provide common point ground for all involved equipment of the building. Provide grounding of specialized OWNER equipment and computer equipment strictly per manufacturer’s and NEC requirements.

B. ELECTRODE:

1. Provide 10-feet x ¾-inch minimum size grounding electrode(s) in solid copper or copper clad configuration to produce system and equipment ground as required. Provide in quantity and location as required for the specific site and soil conditions to yield a maximum resistance measurement of 20 ohms at the service entrance.

2.07 MOTOR STARTERS AND SWITCHES

A. Provide enclosed motor starting switches having starter and overprotection device integral to the unit, with lockout, START and STOP pushbuttons, and illumination “ON” pilot light. Provide NEMA 1 in enclosed areas such as cabinet interiors; NEMA type 4X outdoors. For single phase motors, provide Square D Series LE1UI or 2510-FG(5)P as applicable, with HOA locking switch, pilot light, and enclosure. For three-phase equipment, provide these same features in a combination motor starter enclosure, including overload heaters sized for specific equipment. Connect to equipment per specified operation and per manufacturer’s requirements. Equipment located in concealed locations shall have the starters located in an accessible area, for easy access; coordinate each location and mounting height with the OWNER and ENGINEER. Provide clear identification as to the voltage, circuit, and equipment served by each starter.

2.08 ENCLOSURES AND CABINETS

A. Enclosures and cabinets located outdoors shall be NEMA type 4X. Each enclosure or cabinet in exposed locations shall be provided with hinged locking cover, with adequate space for intended equipment and cabling connections. In concealed locations, cabinets shall be accessible, of adequate size, and provided with screw cover. Where splices or terminations are to be made, CONTRACTOR shall provide terminal strips in quantity to yield 50 percent spare at project closure.

2.09 JUNCTION, OUTLET, AND PULL BOXES

A. Outlet boxes shall be provided as galvanized sheet steel type where in concealed locations, provided with screw cover closures, and conduit knockouts in top, bottom, and side of box. Provide type designed for flush mounting where
required. Where located in wet areas or in exposed unfinished locations, boxes shall be cast metal type, with threaded conduit openings and full-size screw type gasketed cover plate. All boxes shall be sized per NEC as a minimum.

B. Junction and pull boxes shall be galvanized sheet steel type, with screw type cover, welded seams, and sized per NEC as a minimum. Where located in wet areas or in exposed unfinished locations boxes shall be cast metal type, with threaded conduit openings and full-size screw type gasketed cover plate. All boxes shall be sized per NEC as a minimum, and with knockouts as required.

2.10 TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS)

A. SERVICE ENTRANCE PBD:

1. Provide TVSS module, Advanced Protection Technology (APT) Model TE/4000XHP/SC/DC/G (surge capacity of 160 KA per phase, L-L) or equal, meeting 3-pole, 4-wire, counter, L-G protection, and dry contacts for OWNER use; feed power to TVSS module from incoming power. Enclosure shall be NEMA 4X stainless steel.

2.11 DRY TYPE TRANSFORMER

A. Provide general purpose dry type transformers as required. Provide non-ventilated type, having maximum temperature rise of 150°C.

B. Provide cabling, conduit, lockable protective branch circuit breaker, junction boxes, etc. as required to fully accommodate the system. Fully coordinate actual physical size, voltage, connections, and requirements with project site prior to ordering or installing protective feeders, breakers, fuses, transformers, etc. so as to not allow rework in the distribution of power to the transformer and associated devices and equipment. Coordination shall occur early in project to determine transformer feeder sizes and unit location, to accommodate early installation of feeder conduits.

C. Provide disconnect (locking panel breaker) on primary side of transformer within six feet of the transformer, located to maintain NEC clearances. Provide grounding of transformer per NEC and manufacturer requirements.

PART 3 - EXECUTION

3.01 GROUND WIRE

A. In each single phase circuit, one of the three conductors shall be a green insulated equipment ground wire. Three phase circuits shall each carry with the current-carrying conductors a green insulated equipment ground wire. All branch circuits shall contain a dedicated fully-rated neutral back to the panel. Where more than
three current-carrying conductors are routed within one conduit, de-rate conductors per NEC and provide size of conduit and conductors required.

3.02 CONDUIT ROUTING

A. Conduit locations and paths shall be determined prior to installation and will be installed to provide a neat and orderly appearance. Provide grouped turns and bends in conduits. Use only long radius elbow fittings for turn-ups from below grade or slab. Provide empty conduits with full length pull wires, having minimum “extra” length of 18 inches coiled in a concealed location at each end.

B. Wherever possible and practicable, install conduits below grade or below slab so as to minimize resulting exposed conduits; coordinate electrical work, equipment and device locations, power source (panel), required power and control connections, and required interconnecting conduits prior to start of concrete work, so that conduits are in place prior to concrete pour.

3.03 INSTALLED LOADS

A. All breaker and conductor sizing is based on copper conductors and equipment loads as specified. Actual equipment installed may vary from specified equipment. The electrical subcontractor is responsible for ensuring that all conductors and protection equipment are adequate as specified by the NEC for the equipment, loads, and devices actually installed.

3.04 CIRCUITS

A. Provide and install circuit breakers as indicated and required. All circuits shall be neatly and accurately identified in the breaker directories. Coordinate breaker ratings with NEC and manufacturer’s rated required overprotection levels with actual equipment installed, for each circuit.

3.05 EQUIPMENT CONNECTIONS AND COORDINATION

A. Provide and install disconnect switches and starters (other than those provided with equipment), conduit, wiring and other devices as required to yield fully operating systems with overcurrent protection and safety disconnect per the NEC. Coordinate ratings, voltages, phases, locations, NEMA ratings, and all other characteristics with Mechanical equipment approved and supplied to the jobsite prior to ordering equipment.

3.06 DEVICE LOCATIONS

A. Unless otherwise indicated, switch mounting heights shall be 48-inches above finished grade.

B. Receptacle outlets shall be mounted 18-inches above finished grade or as noted. CONTRACTOR shall coordinate all outlets with planned equipment and process
locations and use. Coordinate mounting height of special system devices (controls, etc.) with OWNER, ENGINEER, and separate CONTRACTOR(s) prior to installation. Coordinate device locations with installed locations of structural elements, equipment, devices, and tanks; ensure that locations of devices do not block walkways or potential equipment areas. Mounting heights indicated and specified are to center of device.

3.07 REQUIREMENTS

A. Major items, equipment, and materials are indicated and specified. CONTRACTOR shall provide and install wiring, raceway, devices and miscellaneous equipment as indicated and as needed to provide a complete and operable system. Installation shall comply with the requirements of the NEC and authority having jurisdiction.

3.08 CIRCUITRY

A. Multiple home runs for circuits of the same voltage may be run in single conduit as long as the conduit is at least one size larger than that specified by the NEC for the number of conductors involved after derating. Provide separate neutral and ground back to panel for each circuit.

B. CONTRACTOR shall maintain separation of conductors between conductors of low and higher voltage systems. These circuit conductors shall not be intermingled within conduits, pull stations, or junction boxes; their separation shall be maintained between different voltage systems. Conductors required for low voltage systems (less than 110 VAC) shall be prepared for with separate raceway system, so as to not mix the 120 VAC and higher voltage circuit conductors with those of low voltage service. Conductors serving control elements shall be separated from conductors serving power circuits; conductors delivering 120 VAC shall be separated from conductors carrying 480 VAC circuitry. Equipment shall be provided with control power transformer where required for mechanical or process equipment.

3.09 SUPPORTS

A. Provide metal clamp anchors for vertical raceway on or in walls at six feet on center maximum spacing, and within two feet of all conduit bends and terminations. Provide solid metal hangers or anchors for horizontal exposed raceways, or raceways in other locations, at four feet on center maximum spacing, and within two feet of all conduit bends and termination.

3.10 LOCATIONS

A. Rigidly anchor all electrical components to adjacent construction, suitable for long life under hard industrial use. All components shall be installed in a neat,
workmanlike manner. All switches, receptacles, and other electrical components shall be installed plumb and level.

3.11 CONCEALED DEVICES

A. Conduits, supports, fixtures, devices, and equipment shall be located so as to not hinder operation, maintenance, and removal of mechanical, plumbing, process, or electrical equipment and devices.

3.12 GROUNDING

A. Grounding shall be in accordance with NEC Articles 250, and shall include grounding of all equipment, circuitry, structural elements, and other devices as a minimum.

3.13 CONCRETE SUPPORTS AND EQUIPMENT PADS

A. Concrete shall have a minimum compressive strength of 4,000 psi @ 28 days and 4% to 5% air entrainment and 5-inch maximum slump upon placement. Concrete shall not be placed when temperature will fall below 32°F during placement or during a period of 3-days after placement. Anchor bolts, conduit openings and ground paths, and coordinated openings for conductors, equipment, and conduits shall be set prior to pouring of the slabs. Coordinate with UTILITY, OWNER, and trades prior to concrete pouring (conduit, etc.).

B. Provide 4-inch high concrete housekeeping pad for all floor-mounted equipment. Concrete shall extend equally beyond each edge of equipment face, at a dimension of 2-inches to 8-inches per side; concrete shall be parallel to bottom edge of equipment housing; coordinate size and orientation of concrete with OWNER and ENGINEER prior to placement of conduits, and prior to pouring of concrete.

3.14 TRENCHING

A. CONTRACTOR shall provide all trenching, concrete-forming, gravel, backfill, tamping, fill dirt, paving, and other surface repair as required to accommodate the scope of underground work. Conduits installed shall rest on flat and compacted layer of soil that is free of organics. Coordinate routing with OWNER, Utility, site, and each trade involved. Utilize shared trenches wherever possible; where conduit is installed in a shared trench, locate electrical conduits only above piping that conveys liquid or gas, and maintain the required depth minimum 24-inches below grade for electrical conduits. CONTRACTOR shall provide field services to identify existing piping, conduits, cabling, etc. below grade in or near the areas of work and record findings on project documents for the OWNER. Provide plastic warning tape at 8-inches below grade along full length of underground conduits.
3.15 COORDINATION

A. INSTALLATION:

1. Coordinate as necessary with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this section. Coordinate the installation of electrical items with the schedule for work by other trades to prevent unnecessary delays in the total work. CONTRACTOR shall provide all trenching, cutting, and patching required for the installation of electrical work.

2. CONTRACTOR shall provide testing and marking services to identify existing underground utilities in the area of work at the site, such that all below grade piping, conduit, cabling, equipment, and devices are identified and located. Verify with OWNER the continued use or abandonment required for each utility encountered.

3. CONTRACTOR shall review shop drawings and OWNER information for exact locations and ratings of devices, controls, and equipment prior to installing conduit, connection and junction boxes, equipment, outlet boxes, and other affected electrical items.

B. CONDITIONS:

1. Data indicated on the Construction Drawings and in these Specifications are as exact as could be secured, but their absolute accuracy is not warranted. The exact locations, distances, levels, and other conditions could be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.

C. LOCATIONS:

1. Location of devices, etc. as indicated on the Construction Drawings is intended to be shown as accurately as possible, commensurate with working at a small scale. Such locations, unless definitely dimensioned, should be considered approximate and exact location in all cases shall be obtained and worked out on the job.

D. COORDINATION:

1. Any additional details necessary for proper installation will be developed with ENGINEER approval prior to installation of each component.

E. UTILITIES:

1. CONTRACTOR shall coordinate with electrical utility in obtaining service and shall comply with Utility requirements in the installation of system and accessories.
F. PAINTING:

1. CONTRACTOR shall coordinate with sections, work of other trades, and OWNER and ENGINEER to paint all exposed conduits and non-factory-finished raceways located in finished spaces. All equipment, boxes, devices, etc. that do not have a factory applied finish on them, or that have a color that differs widely from the wall on which they are mounted, shall be painted to meet ENGINEER approval. Coordinate colors, painting methods, and materials with ENGINEER.

3.16 DEMONSTRATION OF COMPLETED ELECTRICAL SYSTEM

A. Refer to Section 017900.

B. CONTRACTOR shall conduct all tests required to verify proper operation of completed electrical system. Comply with NEC and NEMA standards as applicable for conducting tests and establishing procedures, variations, and limits, etc.

C. Coordinate test work with other electrical and mechanical installers to avoid performing tests prior to completion of systems to the extent required for proper testing. Conduct tests in compliance with recognized industry practices to ensure reliable results, using properly calibrated and maintained equipment, and using equipment suitable for obtaining results of the type and nature required. CONTRACTOR shall notify OWNER or OWNER REPRESENTATIVE in advance of tests so as to witness tests if desired.

D. Carefully inspect Electrical Systems for malfunctioning components revealed by testing. Repair, replace, or adjust systems as required to rectify any problems. Include GFCI outlets, and process equipment and controls as a minimum of systems to be fully tested. All mechanical, plumbing, process, and other equipment utilizing electrical power and/or controls shall be tested for proper rotation, control, and operation.

3.17 GROUNDING SYSTEM:

A. Check entire system with Ohmmeter for low resistance of metal raceways, equipment grounds, and grounded conductors. Thoroughly test GFCI receptacles for continuity and operation.

3.18 PROTECTION OF WORK

A. At time of substantial completion, CONTRACTOR shall replace items which have been damaged or scratched, including those burned or scored by faulty plugs.
B. At time of substantial completion, CONTRACTOR shall replace or repair to new condition items that have been scratched, dented, or otherwise marred.

3.19 AS-BUILT DOCUMENTATION

A. CONTRACTOR shall keep a clean and accurate record of the location of all electrical components and equipment, both interior and exterior, both new and existing; CONTRACTOR shall record routes of indoor conduits larger than 1-inch, all conduits below grade or slab, and all outdoor conduits, and shall prepare documentation as specified in Sections 013300, 017700, and 017900. Any modifications due to installation requirements, equipment or manufacturer requirements, or for other purposes that result in the installation of work different than as designed on the Construction Drawings, shall be carefully recorded for use on the as-built drawings.

3.20 PROJECT COMPLETION

A. CLEANUP:

1. Upon completion of the work of this Section, thoroughly clean all exposed portions of the electrical installation, removing all traces of soil, labels, grease, oil, and other foreign material, and using only the type cleaner recommended by the manufacturer of the item being cleaned. Touch up all scratches or blemishes on the factory applied finishes with the manufacturer’s recommended paint. Provide knowledgeable electrician to instruct the OWNER’s representative in operation and maintenance procedures. Provide operation and maintenance manuals for equipment, including source(s) for spare parts and service.

B. SPARE MATERIALS:

1. CONTRACTOR shall provide to OWNER as spare: six of each type and size fuse installed, complete with labels and/or chart indicating the intended device/equipment for usage; panelboard and enclosure keys with two spares for each.

C. MATERIAL LITERATURE:

1. CONTRACTOR shall provide the OWNER three (3) complete sets of data and literature, labeled clearly and accurately, and shall include the following items as a minimum: warranties of products and systems installed; all submitted manufacturer cut sheets (shop drawings) with approval notes intact, installation and maintenance data for devices, equipment, TVSS, panels, and all other installed electrical devices or equipment. CONTRACTOR shall also provide to the OWNER three (3) complete sets of full-size, neatly marked as-built drawings representing the final connections and conditions of the project.
D. EQUIPMENT OPERATION:

1. Provide knowledgeable electrician to instruct the OWNER’s representative in operation and maintenance procedures on all installed devices and equipment. Provide three (3) copies of the operation and maintenance manuals for equipment, including local service center and source(s) for spare parts and service.

END OF SECTION
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DIVISION 31

EARTHWORK
SECTION 312000
EARTH MOVING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope: CONTRACTOR shall provide all labor, materials, soils, equipment, and incidentals to excavate, trench, and backfill to install pipe and appurtenances, and regrade disturbed areas as shown on the Construction Drawings, and described in this Section.

B. The Work specified in this Section includes the trenching and trench backfilling activities associated with installation of the LFG extraction wells, LFG lateral pipe, air supply pipe and leachate dewatering forcemain; and any other Work requiring drilling, excavation, or trenching and trench backfilling.

C. Work under this Section includes trenching activities both in and outside of municipal solid waste (MSW).

D. The Work specified in this Section includes site grading and filling for the new Blower/Flare Station.

E. No classification of type of excavated materials will be made. Excavation includes all soil, and waste materials if encountered, regardless of type, character, composition, moisture, or condition thereof.

1.02 PROJECT CONDITIONS

A. Existing Structures within the project limits include, but are not limited to above and below ground structures such as:

1. Stormwater drainage structures
2. Existing landfill gas wells
3. Header and lateral pipe
4. Above and below ground utilities
5. Drainage culverts
6. Leachate pump stations
7. Leachate forcemain
8. Leachate cleanouts
B. This information has been obtained from existing records. It is not guaranteed to be correct or complete and is shown for the convenience of the CONTRACTOR. The CONTRACTOR shall explore ahead of the required excavation to determine the exact location of all structures.

C. Structures shall be supported and protected from damage by the CONTRACTOR. If structures are broken or injured, CONTRACTOR shall restore structures to their original condition at no additional cost to the OWNER. Repair of damaged features or structures shall be approved by the ENGINEER and OWNER.

1.03 SITE ACCESS

Work shall be performed so as to not block or hinder site access, except as authorized by the OWNER.

1.04 SAFETY

A. All Work shall be performed in strict accordance with the Health and Safety requirements set forth in the General Conditions of the Contract Documents.

B. All work shall be performed in strict accordance with all local, State, U.S. Occupational Safety and Health Administration (OSHA) and other applicable Federal regulations regarding trenching operations and trench safety.

C. Excavation may be made without sheeting and bracing within the limitations and requirements of the governmental agencies having jurisdiction. Failure of the ENGINEER to order the use of bracing or sheeting and shoring or direct changes to systems in place, shall not in any way or to any extent relieve the CONTRACTOR of any responsibility concerning the condition of excavations or of his obligations under the Contract. The CONTRACTOR shall be responsible for the condition of all excavations. All slides and caves shall be removed without extra compensation, at whatever time and under whatever circumstances that they may occur.

D. All excavation shall comply with the applicable requirements as stated in the following:

1. OSHA trenching and excavation safety regulations Subpart P of Part 1926, as revised.

2. Trench safety guidelines as specified by the Landfill Gas Division of the Solid Waste Association of North America (SWANA).

1.05 SUBMITTALS

A. Health and Safety Plan, as described in the General Conditions of the Contract Documents.
B. CONTRACTOR daily logs detailing length of trench excavated and backfilled, with reference to pipe stationing and details sufficient to properly describe the work completed to date.

PART 2 - PRODUCTS

2.01 PIPE BEDDING AND SOIL BACKFILL

A. To the maximum extent practical, CONTRACTOR shall separate excavated cover soils overlying refuse and reuse clean soils for pipe bedding and trench backfill.

B. For excavations outside the limits of waste, or above the geomembrane cap, CONTRACTOR shall reuse excavated soils from trenching for backfilling around installed pipe, unless directed otherwise by ENGINEER. Reused soils shall conform to Part 2.01 D. and E. of this Section.

C. Beyond the reusable quantities of soil described above, the CONTRACTOR shall provide appropriate pipe bedding and soil backfill material from an off-site source.

D. These soils shall generally be free of sticks, roots, organic matter, and stones larger than 1-inch in any dimensions. Pipe bedding and backfill soils shall be approved by the ENGINEER.

E. Pipe bedding material shall be appropriate for spreading with hand tools and compaction with vibratory compactor to provide a level and stable surface for pipe placement. Pipe bedding and backfill solids shall be approved by the ENGINEER.

2.02 NON-CALCAREOUS STONE

A. Stone backfill shall be hard, durable non-calcareous rock. Stone shall be washed as a component of the manufacturing process and be free of organics, lumps or balls of clay, and other deleterious materials.

B. Stone shall be NCDOT No. 4 and conform to the following gradation requirements:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing (by Weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-inch</td>
<td>100</td>
</tr>
<tr>
<td>1-inch</td>
<td>35</td>
</tr>
<tr>
<td>3/4-inch</td>
<td>5</td>
</tr>
<tr>
<td>3/8-inch</td>
<td>0</td>
</tr>
</tbody>
</table>
PART 3 - EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours and datum locations.

B. Locate, identify and protect utilities from damage.

C. Protect benchmarks, survey control points, monitoring wells, geomembrane cap (where present), existing structures and fences from excavating equipment and vehicular traffic.

3.02 PRE-CONSTRUCTION LAYOUT

A. Prior to trenching and pipe installation, CONTRACTOR shall stake out the entire proposed trench alignment both within and outside the limits of waste. The proposed alignment must be approved by the ENGINEER prior to the CONTRACTOR beginning excavation activities. This pipeline route staking need not be completed by a licensed surveyor.

B. Survey stakes shall be set to a depth so as to not penetrate the existing geomembrane cap below grade. Any damage to the cap shall be repaired by CONTRACTOR at no additional cost to the OWNER.

C. LFG header and lateral route on the landfill shall be staked to allow for the minimum pipe slopes listed in this specification and on the Plans.

D. Survey notes with proposed pipe slope calculations shall be submitted to the ENGINEER for approval prior to pipe installation. Notes of pre-construction survey shall identify conflicts between the proposed Work and existing features.

3.03 EXCAVATION

A. Excavated cover material shall be separated from excavated refuse wherever possible and any cover material free of refuse may be reused as backfill material, pursuant to the requirements of Part 2.01 of this Section.

B. Waste materials shall be direct loaded into transport vehicles and hauled by CONTRACTOR to the operating portion of the landfill for disposal during normal operating hours. At no time shall excavated waste be stockpiled adjacent to the excavations.

C. Excavate to lines, grades and dimensions necessary to complete the Work.
D. Trenching Tolerances:

1. Excavate to install pipes in straight runs at a uniform grade, without sags or humps, between vertical and horizontal control points in accordance with the Construction Drawings.

2. Minimum trench width shall be as shown on the Plans.

3. Maintain a minimum of 1.5 feet of soil cover over the top of the pipe, except where shown otherwise on the Plans, or approved by ENGINEER.

E. CONTRACTOR may not excavate more trench daily than can be completely backfilled after installation of the pipe the same day. Excavations shall not be left open overnight.

F. CONTRACTOR shall use appropriate survey/level instrumentation during excavation to ensure proper trench slope. Verification of installed pipe slope shall be as specified in Part 3.06.

G. Minimum trench slopes shall be as shown on the Plans or approved by the ENGINEER. Landfill gas laterals shall be installed with at least 3 percent slope toward the header into which it connects.

3.04 DEWATERING

A. Water that enters excavations into refuse shall be considered landfill leachate and shall not be discharged to the ground or other means that are typical for stormwater. Water in trench excavations in the refuse shall be pumped into sealed tanks and hauled and discharged into the on-site leachate lagoon.

B. The CONTRACTOR shall at all times during construction provide and maintain proper equipment and facilities to remove water entering excavations. CONTRACTOR shall keep such excavations dry so as to obtain a satisfactory foundation condition for all work.

C. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottom, and soil changes detrimental to stability of subgrades and foundations. Subgrade soils which become soft, loose, “quick”, or otherwise unsatisfactory for support of structure as a result of inadequate dewatering or other construction methods shall be removed and replaced by crushed stone as required by the ENGINEER at the CONTRACTOR’s expense. The bottom of excavations shall be firm and without standing water before placing structures or pipes. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
D. For excavations not in refuse, establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or runoff areas. Do not use trench excavations as temporary drainage ditches.

E. Disposal of Water Removed by Dewatering System:

1. Water conveyed away from excavations which has not contacted refuse materials shall be discharged to areas, as approved by the ENGINEER.

2. Dispose of water by procedures approved by the ENGINEER in such a manner as to cause no inconvenience to the OWNER, the ENGINEER, or others involved in work about the site.

3. Water conveyed away from excavations which has contacted refuse materials shall be pumped into spill-proof containers and discharged into the leachate collection sump as directed by the OWNER.

F. If pipe trench becomes watered-in after placement of pipe, but before backfilling, CONTRACTOR shall dewater the trench, demonstrate that the pipe bedding and pipe slope remain satisfactory, and upon approval by the ENGINEER, backfill the pipe with clean dry soil in accordance with Part 2.01 of this Section.

### 3.05 ROAD CROSSING

A. CONTRACTOR shall schedule and coordinate all road crossings with OWNER to minimize disruption of waste disposal operations.

B. HDPE pipes shall be encased in a corrugated metal pipe (CMP) for protection. The inner diameter of the CMP shall be a minimum of four (4) inches larger than the outside diameter of the HDPE pipe or pipes.

### 3.06 PIPE SURVEY

A. CONTRACTOR shall verify that pipe slope meets the requirements specified in this Section and on the Construction Drawings at 10-foot intervals along LFG laterals and header and record such information in the project notes. Station numbering shall be used and marked on the pipe, as approved by the ENGINEER.

1. CONTRACTOR shall measure each length of installed pipe and mark the 10-foot stations.

2. Survey equipment shall be used to measure the change in relative elevation between each 10-foot station.

3. The change in elevation and slope for each 10-foot section shall be recorded in the CONTRACTOR’s project notes.
4. A trench laser will not be considered acceptable survey equipment for the purpose of verifying pipe slope.

B. The project notes detailing the required pipe slope confirmation shall be provided daily to the ENGINEER and shall be checked by the OWNER or ENGINEER prior to proceeding with backfilling.

C. A conformance survey shall be conducted on all installed pipe and structures prior to backfilling the trench. The survey shall document the horizontal and vertical location of the top of the landfill gas laterals, air supply lines, and leachate dewatering forcemain pipes at a minimum 50-foot interval and at each change in pipe direction, grade break, fitting, connection, pipe crossover, and tie-in along the entire pipeline routes. The survey shall also document the type of pipe, location (horizontal and vertical coordinate) of structures and appurtenances such as, but not limited to, valves, road crossing CMP casing, pipe crossing, and tie-ins. This surveying shall be sealed by a licensed North Carolina Professional Land Surveyor as described in Section 017700, Closeout Procedures.

3.07 BACKFILLING

A. Backfill materials shall be as described in Part 2 of this Section.

B. CONTRACTOR shall notify OWNER or OWNER representative prior to beginning backfilling. The OWNER or OWNER representative shall inspect all pipe, fittings and connections prior to approving backfilling. If CONTRACTOR backfills pipe without inspection of the pipe while pipe is installed in the open trench, CONTRACTOR shall uncover all uninspected buried pipe so that it may be properly inspected. This shall be done at no additional cost to the OWNER.

C. Place bedding material in trench to the lines and grades shown on the Plans.

D. Bedding material shall be placed in the trench ensuring material is placed under the haunch of the pipe. The bedding shall be poured into place, not pushed, and shall be raked by hand and then compacted using a mechanical compaction device such as walk-behind vibratory compactor, in a loose lift not to exceed six (6) inches above the top of the pipe.

E. Backfilling procedures shall be modified as necessary as approved by ENGINEER in order to not displace (either horizontally or vertically) piping installed in trench during backfill or bedding placement.

F. Place soil backfill in maximum 6 inch lifts above pipe bedding to the existing grade. CONTRACTOR shall compact soil backfill in 6 inch lifts with a mechanical compaction device such as a walk-behind vibratory compactor. Compaction shall be to a density where subsequent passes with the mechanical compaction device will not reduce the surface elevation of the bedding material by more than three-quarters of an inch shall.
3.08 WASTE DISPOSAL

A. The CONTRACTOR shall notify the OWNER a minimum of 24 hours in advance of planned excavation of landfill refuse. In the event landfill refuse is inadvertently excavated or disturbed, the CONTRACTOR shall notify the OWNER immediately.

B. The CONTRACTOR shall be responsible for loading and transporting refuse to the landfill working face, or other area as directed by the OWNER for disposal. The OWNER will not charge CONTRACTOR a tipping fee, but CONTRACTOR shall be responsible for all other costs. Excavated refuse shall be direct-loaded into transport vehicles and hauled by CONTRACTOR to the landfill working face. At no time shall excavated waste be stockpiled adjacent to the excavations.

3.09 GRADING DISTURBED AREAS

CONTRACTOR shall regrade and return to their original condition, as determined by the OWNER and the ENGINEER, all areas disturbed by CONTRACTOR’s work. This includes, but is not limited to ruts caused by construction equipment, soil stockpile areas, and landfill benches and terraces used for access.

3.10 REVEGETATION

A. Disturbed areas within the MSW Landfill shall be sodded with bahia sod. Areas outside of the MSW Landfill shall be seeded and matted with ENGINEER approved seed mixture and temporary erosion control straw matting. CONTRACTOR shall apply fertilizer and topsoil as necessary to provide suitable conditions for growth.

B. CONTRACTOR shall maintain (i.e., fertilize and water only, as necessary) revegetated areas until grass becomes established as determined by the OWNER.

C. Until accepted by OWNER as established vegetation, areas of dead grass or no or marginal grass shall be replaced by CONTRACTOR at no additional cost to the OWNER.

3.11 GEOMEMBRANE CAP

A. At each extraction well installed, CONTRACTOR shall repair geomembrane and geocomposite cap components to the satisfaction of the OWNER.

B. CONTRACTOR shall avoid damaging geomembrane cap during trenching and pipe installation. The approximate limits of the cap are shown on the Construction Drawings. The CONTRACTOR is encouraged to review the Record Drawings for the partial closure areas to become familiar with the cap system.
C. CONTRACTOR shall repair any damage caused to cap geomembrane or geocomposite by any work or activities related to this project at no additional cost to the OWNER.

D. CONTRACTOR shall conduct at their own cost all necessary geomembrane and geocomposite patches, fusing, testing and certification of repairs to the satisfaction of the ENGINEER in accordance with industry standard practices and protocol.

END OF SECTION
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DIVISION 33

UTILITIES
PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Furnish all labor, materials, equipment and incidentals required to install all stainless steel piping shown on the Construction Drawings and/or specified herein.

1.2 SUBMITTALS

A. Submittals shall be made in accordance with Section 013000 – Submittal Procedures. In addition, the following specific information shall be provided:
   1. Submit materials list showing material of pipe and fittings with ASTM reference and grade.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe:
   1. Stainless steel pipe three inches and smaller shall conform to ASTM A312, Grade TP 304. Pipe sizes and wall thicknesses shall conform to ANSI B36.19 as follows:

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Wall Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-inch and smaller</td>
<td>Schedule 80S</td>
</tr>
<tr>
<td>1-1/4 inch through 3 inch</td>
<td>Schedule 40S</td>
</tr>
<tr>
<td>4 inch through 12 inch</td>
<td>Schedule 10S</td>
</tr>
</tbody>
</table>

B. Fittings:
   1. Fittings 1-1/2 inches and smaller shall be threaded conforming to ASTM A 403, Class WP, same material and wall thickness as the pipe, conforming to ANSI B16.11.
   2. Fittings larger than 1-1/2 inch shall be butt weld conforming to ASTM A 312. Class shall be same as mating pipe.
C. Joints:
   1. Joints for pipes 1-1/2 inches and smaller shall be threaded or socket welded, same material as the pipe, 3000-pound WOG, conforming to ANSI B16.11.
   2. Joints for pipes larger than 1-1/2 inches shall be flanged conforming to ASTM A182. Flanges shall be 150# RF weld neck.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Threaded fittings and joints are to be minimized and subject to approval or rejection by the ENGINEER.

B. Stainless steel piping shall be installed true to alignment and rigidly supported.

C. After installation, completed pipe lines shall be washed clean with steam or hot water to remove any foreign material picked up during transport, storage or installation.

D. Installed Welded Piping: Joint welding shall be in accordance with AWS and ASME Standards. All welds shall be treated with pickling paste, scrubbed and washed with stainless steel wire brushes until clean.

E. Installing Threaded Piping: Ream, clean and remove burrs from threaded piping before making up joints. Apply thread lubricant to threaded ends before installing fittings, couplings, unions or joints.

3.2 FABRICATION, ASSEMBLY AND ERECTION OF WELDED PIPING

A. Beveled ends for butt-welding shall conform to ANSI B16.25. Remove slag by chipping or grinding. Surfaces shall be clean of paint, oil, rust, scale, slag, and other material detrimental to welding.

B. Fabrication shall comply with ANSI B31.3, Chapter V. The minimum number of passes for welded joints shall be as follows:

<table>
<thead>
<tr>
<th>Cylinder Thickness (inch)</th>
<th>Minimum Number of Passes for Welds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 0.1875</td>
<td>1</td>
</tr>
<tr>
<td>0.1875 through 0.25</td>
<td>2</td>
</tr>
<tr>
<td>Greater than 0.25</td>
<td>3</td>
</tr>
</tbody>
</table>

Welds shall be full circumferential.
C. Root pass shall be tungsten inert gas (TIG). Cover passes may be shielded metal arc welding (SMAW), flux core arc welding (FCAW) or tungsten inert gas (TIG).

D. Welding preparation shall comply with ANSI B31.3, paragraph 327.3. Limitations on imperfections in welds shall conform to the requirements in ANSI B31.3, Tables 327.4.1A and 327.4.1B, and paragraph 327.4 for visual examination. Identify welds in accordance with ANSI B31.3, paragraph 327.4.

E. Clean each layer of deposited weld metal prior to depositing the next layer of weld metal, including the final pass, by a power-driven wire brush of the same material.

F. Welding electrodes shall comply with AWS A5.4. Bare wire shall comply with AWS A5.9.

3.3 PRESSURE TESTING

A. After installation, all stainless steel piping shall be tested with compressed air for at least one hour at 1-1/2 times the working pressure or as required by the ENGINEER. If any joint or pipe proves defective, it shall be repaired to the satisfaction of the ENGINEER.

END OF SECTION
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SECTION 330533
HIGH DENSITY POLYETHYLENE PIPE

PART 1 - GENERAL

1.1 DESCRIPTION

A. CONTRACTOR shall supply all materials, equipment, and labor needed to install and ready for use all HDPE pipe, pipe fittings, and appurtenances as specified herein and as indicated on the Construction Drawings.

1.2 SUBMITTALS

A. CONTRACTOR shall prepare and submit to the ENGINEER, for review and approval, certificates of compliance on materials furnished and manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, inspection, maintenance, and repair of each type of pipe and pipe fitting furnished. Cut sheets with dimensions shall be submitted for each fitting.

1.3 REFERENCE

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. The latest editions of these documents at the time of contract award are the applicable versions.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1248 Specification for Polyethylene Plastics Molding and Extrusion Materials
ASTM D 2321 Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe
ASTM F 714 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter
ASTM D 2774 Practice for Underground Installation of Thermoplastic Pressure Piping
ASTM D 3350 Specification for Polyethylene Plastics Pipe and Fittings Materials
PART 2 - PRODUCTS

2.1 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

A. General:

1. All pipe and fittings intended for landfill gas shall be high density polyethylene pipe using a PE3408 type resin (2306 type resin for fittings less than 4-inch-diameter), or approved equal.

2. Pipe shall be extruded from a Type III, Class C, Category 5, Grade PE34 compound as described in ASTM D 1248. It shall be classified as cell 345464C according to ASTM D 3350 and have the material designation of PE 3408. The pipe shall be manufactured to meet the requirements of ASTM F 714. Manufacturer's literature shall be adhered to when "manufacturer's recommendations" are specified. Acceptable manufacturers include Performance Pipe, Central Plastics, Rinker Materials Polypipe, or approved equal.

3. Corrugated HDPE pipe shall comply with the requirements for test methods, dimensions and markings found in AASHTO designations M252 and M294. Pipe and fittings shall be made from virgin PE compounds which conform with the requirements of cell class 324420C as defined and described in ASTM D3550. Acceptable manufacturers include Advanced Drainage Systems (ADS) N-12 corrugated HDPE pipe.

B. HDPE Pipe Storage:

1. HDPE pipe shall be stored or stacked so as to prevent damage by marring, crushing, or piercing. Maximum stacking height shall be limited to 6 feet. For storage over 5 days, a location shall be chosen out of direct sunlight or the piping and fittings shall be covered.

2.2 FLANGES FOR HDPE PIPE

A. Flanges for HDPE pipe shall be convoluted ductile iron back-up rings with a minimum thickness of 1-inch, as manufactured by Improved Piping Products, Inc., of Orinda, California, or approved equal. Back-up rings shall be finished with red oxide primer.
B. Studs and bolts, nuts, and washers for flanges shall be stainless steel or as shown on the Construction Drawings.

2.3 QUICK DISCONNECT COUPLINGS

A. Quick disconnect couplings shall consist of Delrin Acetal bodies with stainless steel springs, latches and pins, rated at a minimum of 120 psi. The coupling shall be ¼-inch NPT, shutoff type as manufactured by Colder Products Company or equal.

PART 3 - EXECUTION

3.1 HDPE PIPE HANDLING

A. HDPE pipe shall not be bent more than the minimum radius recommended by the manufacturer for type, grade, and SDR. Care shall be taken to avoid imposing strains that will overstress or buckle the HDPE piping or impose excessive stress on the joints.

B. Joining HDPE Pipe:

1. Only two methods shall be utilized to joining HDPE pipe: heat fusion and mechanical joining.
   a. Mechanical Joining shall be accomplished with HDPE flange adapters, neoprene gaskets, and ductile iron back-up flanges, and shall be used only where shown on the Drawings.
   b. Heat Fusion joints shall be made in accordance with manufacturer's recommendations and step by step procedures. Fusion equipment and a trained operator shall be provided by the CONTRACTOR. Pipe fusion equipment shall be of the size and nature to adequately weld all pipe sizes and fittings necessary to complete the project. Branch saddle fusions shall be made in accordance with manufacturer's recommendations and step by step procedures. Branch saddle fusion equipment shall be of the size to facilitate saddle fusion within the trench. Heat fusion shall be performed outside of the trench whenever practical. Before heat fusing pipe, each length shall be inspected for the presence of dirt, sand, mud, shavings, and other debris. Any foreign material shall be completely removed. At the end of each day, all open ends of fused pipe shall be capped or otherwise covered to prevent entry by animals or debris.
   c. No fusion shall be performed in the rain or wet conditions.
   d. Electrofusion couplings may be installed in accordance with the manufacturer’s recommendations.
3.2 HDPE PIPE INSTALLATION

A. Pipe installation shall comply with the requirements of ASTM D 2321, PPI TR-31/9-79, and the manufacturer's recommendations.

B. ENGINEER shall be notified prior to any pipe being installed in the trench in order for him/her to have an opportunity to inspect the following items:

1. All butt and saddle fusions.
2. Pipe integrity.
3. Trench excavation for rocks and foreign material.
4. Proper trench slope.
5. Trench contour to ensure the pipe will have uniform and continuous support.

C. Any irregularities found by the ENGINEER during this inspection must be corrected before lowering the pipe into the trench. Pipe shall be allowed sufficient time to adjust to trench temperature prior to any testing, segment tie-ins, and/or backfilling.

D. Tie-ins shall be made out of the trench whenever possible. When tie-ins can only be made in the trench, a bell hole shall be excavated large enough to ensure an adequate and safe work area.

E. All branch saddle connections shall be made within the trench. For such operations, a bell hole shall be excavated large enough to ensure an adequate and safe work area.

3.3 FLANGED CONNECTIONS

A. Flanged connections for PE pipe shall be made with two PE flange adapters with ductile iron back-up rings for bolting.

B. CONTRACTOR shall wrap and tape the flanges and bolts in 5-mil polyethylene sheeting prior to backfilling to help protect the assembly from corrosion.

3.4 SEGMENT TESTING FOR HDPE PIPE

A. All HDPE pipes shall be subjected to an air test as described herein and in accordance with ASTM F 1417 to detect any leaks in the piping. Testing shall be performed below grade (inside the trench). CONTRACTOR shall accept the responsibility for location, uncovering (if previously backfilled), and repairing any leaks detected during testing. For dual containment piping, segment testing shall be performed separately on both product and containment pipes.
B. Segments shall be connected to a testing apparatus on one end and fitted with caps on all openings.

C. The segment to be tested shall be allowed time to reach constant and/or ambient temperature before initiating the test.

D. The test shall be performed during a period when the pipe segment will be out of direct sunlight when possible; i.e., early morning, late evening, or cloudy days. This will minimize the pressure changes, which will occur during temperature fluctuations.

E. The test pressure for LFG pipe shall be at 4 psig and the forcemain and compressed air pipe at 100 psig, or as approved by ENGINEER.

F. Pressure drop during the test shall not exceed 10 percent of the testing gauge pressure over a period of one (1) hour. This pressure drop shall be corrected for temperature changes before determining pass or failure. The ENGINEER or OWNER’S CQA REPRESENTATIVE shall document test compliance.

G. The ENGINEER or OWNER’S CQA REPRESENTATIVE shall be notified prior to commencement of the testing procedure and shall be present during the test.

END OF SECTION
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SECTION 335120
LFG SYSTEM VALVES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: The CONTRACTOR shall provide all materials, equipment, and labor needed to install and make ready all valves as specified herein and as indicated on the Drawings.

B. Related Work Described Elsewhere:
   1. Section 330533 - High Density Polyethylene Pipe
   2. Construction Drawings

1.02 SUBMITTALS

A. The CONTRACTOR shall prepare and submit to the ENGINEER, for review and approval, manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, inspection, maintenance, operation, and repair of each type of valve furnished. Shop drawings shall be submitted for butterfly valve assemblies requiring spacers per this specification.

PART 2 - MATERIALS

2.01 GENERAL

A. All valves shall be complete with all necessary operators, actuators, handwheels, chain wheels, extension stems, floor stands, worm and gear operators, operating nuts, chains, wrenches, and other accessories or appurtenances which are required for the proper completion of the work. Operators, actuators, and other accessories shall be sized and furnished by the valve supplier and factory mounted.

B. Valves shall be suitable for the intended service. Renewable parts including discs, packing, and seats shall be of types recommended by valve manufacturer for intended service, but not of a lower quality than specified herein.

C. Valves and operators shall be suitable for buried or exposed conditions, as applicable. Valves shall have all safety features required by OSHA.

D. Unless otherwise shown on the Construction Drawings, valves shall be the same size as the adjoining pipe.
E. Monitoring parts and hoses shall be provided at each buried isolation valve. Ports threaded into header shall be Swagelock ¼-inch SS-420-1-4 x1/4” MPT, or approved equal. Monitoring hose shall be stainless steel teflon-lined hose with Swagelock tube ends, model SS-4BHT-36, or approved equal, of adequate length to extend above grade (above-specified length is for 3-foot long tubing section). Sampling end shall have a ¼-inch female connector SS-420-7-4 with a quick-connect polypropylene monitoring port by Ryan Herco, Part No. 0812-002.

2.02 BUTTERFLY VALVES

A. Header isolation valves shall be butterfly bubble tight, wafer design, with a PVC body, nitrile seat, and compatible with a flat face flange, as manufactured by Asahi/America or equal. Stem extensions shall be stainless steel in a CPVC Body with CPVC disc with a gear box assembly and visual valve position indicator mounted on top and equipped with a removable manual operating wheel. Monitoring ports at the butterfly valves shall be quick-connects as specified above and shown on the Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Valves shall be installed in accordance with the manufacturer's recommendations and the following:

1. Butterfly valves shall be installed between two flanges as shown on the Drawings; care shall be taken to avoid stripping bolts when tightening.

2. Flanges shall be joined with 316 stainless steel studs and nuts. All below grade studs and nuts shall be coated with anti-seize compound, or approved equivalent, after installation and prior to backfilling. Stud and nut diameters shall be sized as recommended by the manufacturer for each size valve. Stud lengths shall accommodate the required distance between flanges including spacers, if necessary.

B. The CONTRACTOR shall wrap and tape the valve, flanges, and bolts in 5-mil polyethylene sheeting prior to backfilling to help protect the valve assembly from corrosion.

C. Flanged butterfly valves may require spacers between the flange adapters and the valve body in order to allow full travel of the internal disk. If spacers are necessary for any butterfly valve, the CONTRACTOR will install valve spacers subject to the approval by the ENGINEER.

END OF SECTION
DIVISION 43

PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT
SECTION 431251

ROTARY SCREW AIR COMPRESSOR

PART 1 - GENERAL

1.01 DESCRIPTION

A. Materials, equipment, and incidentals necessary to provide a rotary screw air compressor package as specified herein, including all appurtenances for a complete system ready for installation and operation.

B. Installation.

C. Delivery to the New Hanover County Landfill located at 5210 US-421, Wilmington, NC 28401 and field testing and training. Unloading and installation of air compressor package by others.

D. The air compressor package shall include the following sub-systems:
   1. Rotary screw compressor with dual filtration and refrigerated air dryer.
   2. 120-gallon receiver tank beneath compressor.
   3. Control system.

1.02 SUBMITTALS

A. The CONTRACTOR shall prepare and submit to the ENGINEER for review and approval manufacturer's literature, shop drawings, or other information pertaining to the assembly, operation, lubrication, adjustments, and other maintenance and repairs of equipment provided under this Section, together with detailed parts lists, plans, and/or photographs.

PART 2 - MATERIALS

2.01 AIR COMPRESSOR

A. The CONTRACTOR shall furnish and deliver one (1) rotary screw air compressor manufactured for continuous operation in an outdoor environment. The air compressor shall be capable of delivering process air meeting the following requirements:

   Motor: 480V, three phase, totally enclosed fan cooled
   Rated Minimum Pressure = 130 psig
   Minimum Volume = 50 scfm
B. The compressor package shall be manufactured by Gardner-Denver, Ingersoll-Rand or ENGINEER approved equal, with appurtenances such that the requirements for the process air specified in 2.01.A above are met. The compressor shall have a 120-gallon receiver tank and dual air filter with refrigerated air dryer.

2.02 SPARE PARTS

A. The CONTRACTOR shall provide one (1) additional inlet filters.

PART 3 - EXECUTION

3.01 GENERAL

A. CONTRACTOR to unload and install air compressor at location designated on the Construction Drawings.

3.02 START-UP AND TESTING

A. Factory Test. Prior to shipment, the entire equipment and all circuits, control systems and devices, including all alarm signals, shall be tested. All the apparatus shall be cleaned, adjusted and made ready for shipment after testing.

B. Functional and Validation Tests. Upon completion of the installation, functional and validation tests shall be performed by the CONTRACTOR with the assistance of the manufacture, in the presence of the ENGINEER.

3.03 DEMONSTRATIONS

A. Demonstrations shall be separate from the installation, startup, and equipment adjustment services described in 3.02 above. System operations under all alarm conditions shall be demonstrated. Some of these alarm conditions may be simulated (e.g., via electrical jumpers) for demonstration purposes.

B. The Demonstration Test shall demonstrate that all items of these Specifications have been met by the equipment as installed and shall include, but not be limited to, the following tests:

1. That the system has been properly installed and all parts are in correct alignment.

2. That the system performs satisfactorily during continuous operation for at least three (3) consecutive days.

3. That there are no mechanical or electrical defects in any of the parts.

4. That the controls perform satisfactorily, including automatic starting and stopping, manual operation, and safety shutdows.
DIVISION 44

POLLUTION AND WASTE CONTROL EQUIPMENT
PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. Materials, equipment, and incidentals necessary to manufacture a landfill gas blower/flare system as specified herein, including all appurtenances for a complete system ready for installation and operation.

2. Delivery to landfill property and unloading equipment.

3. Installation.

4. Start-up, testing, and training. Refer Specification Section 017900.

5. The landfill gas blower/flare system shall include the following sub-systems:
   a. Gas Handling System.
   b. Candlestick Flare System.
   c. Control System.

1.02 SUBMITTALS

A. All equipment and accessories shall have manufacturer’s Shop Drawings approved by the ENGINEER prior to shipment and shall be tested for conformance with these Specifications prior to acceptance and final payment by the OWNER. The following materials and shop drawing information shall be submitted:

1. Certified Shop Drawings showing all important details of construction and dimensions.

2. Descriptive literature, bulletins, and/or catalogs of the equipment.

3. A complete bill of materials for all equipment.

4. The total weight of the equipment, including the weight of the single largest item.

5. Complete performance data that will indicate full compliance with the Specifications; performance curves for flow and pressure/vacuum
capacity; calculations showing the equipment gas flow and motor corrections required for operation at the elevation of the job site.

6. Complete control panel diagrams and elevations showing all components, wires, connections, and numbered terminals.

7. Complete electrical interconnect diagram showing all wires and terminals between the control panel and external devices.

8. Exceptions to the applicable requirements, Plans, Specifications, and applicable codes and standards.

9. Certification that the equipment furnished for this project does not exceed the sound pressure specified herein.

B. Three (3) copies of a draft operation and maintenance manual shall be required four weeks prior to equipment delivery. Three copies of the final manual shall be submitted two weeks after start-up that incorporate comments of the ENGINEER and any revisions made during start-up. The manual shall be prepared specifically for this installation and shall include all required catalog cuts, drawings, equipment list, descriptions, definitions, procedures, and information necessary to instruct operating and maintenance personnel unfamiliar with such equipment. The manual shall include a list of suppliers, with phone numbers and contact, for equipment parts that may need servicing or replacement.

C. Test Procedures: Detailed outline of functional test procedures shall include a step by step description of the proposed tests, a list of all test equipment including calibration dates, and signoff sheets.

D. Spare Parts: In addition to the spare parts recommended by this Specification, a list of manufacturer's recommended spare parts shall be submitted.

E. Mass flow meter calibration certification.

1.03 QUALIFICATION

A. The Landfill Gas Blower/Flare System, including all ancillary equipment, shall be furnished by a manufacturer who is fully experienced, reputable, and qualified in the manufacture of the equipment to be furnished. The equipment shall be designed and fabricated in accordance with the best practices and methods. The manufacturer shall have experience in supplying equipment for landfill gas handling systems.

B. The Landfill Gas Blower/Flare System shall be manufactured by Perennial Energy, Inc., John Zink Company, LFG Specialties, Inc. or Parnel Biogas, Inc.
1.04  DESIGN CRITERIA

A.  Landfill Gas Blowers

1.  Equipment specified herein shall be skid mounted and intended to be standard equipment for use in a landfill gas handling system.

2.  The blowers shall be designed for continuous operation in an outdoor environment and shall conform to the following:

   Number required 2  (space and piping for a third blower)
   Rated capacity, scfm 2,500 each
   Minimum capacity, scfm 250 each
   Site elevation Approximately 15 feet above MSL
   Gas composition
      Methane 25 - 55 percent
      Carbon Dioxide 25 - 50 percent
      Oxygen 0 - 5 percent
      Traces gases (e.g., VOCs, H₂S) 0 - 1 percent
   Blower inlet vacuum, inches of water 60
   Blower outlet pressure, inches of water 10
   Landfill gas inlet temperature
      Maximum, degrees F 140
      Minimum, degrees F 60
   Motor
      480V, three phase, totally enclosed fan cooled
      Shaft speed, rpm 4,200
      Minimum motor efficiency, percent 50
      Minimum motor power factor, percent 72
      Motor service factor 1.15
      Noise limit 85 dbA at 3 feet
      LFG moisture content 100% saturated

3.  When rated volumetric capacity is reduced to 40 percent of design, blowers under the specified inlet conditions shall not surge or overload the motor.

4.  Each blower equipment rating shall be based upon data previously established by tests in accordance with the ASME Power Test Code for Centrifugal Blowers.

B.  Candlestick Flare System:

1.  The landfill gas flare system shall be designed to operate continuously at the following service conditions:
Landfill gas flow rate, scfm 250 to 3,000
Btu loading, MM Btu/hour 7 to 100
Inlet temperature, degrees F 60 to 140
LFG moisture content 100% saturated
Landfill gas composition range:
   Methane 25 to 55 percent
   Carbon Dioxide 25 - 50 percent
   Oxygen 0 - 5 percent
   Traces gases (e.g., VOCs, H2S) 0 - 1 percent
Site elevation: 15 feet above MSL
Controls and accessories to include the following:
   Propane supply with a spark igniter for flame ignition.
   Thermocouple for flame temperature confirmation.
   Ultraviolet flame scanner or thermocouple for flame confirmation.
   Flare control panel.
   Auto re-start.
   Automatic notification system for failure to restart.
   Pneumatically-operated emergency shut-off valve.
   Flow meter.
   Digital data recorder.
   Flame arrester.
   Flare stack liquids drain.

2. At maximum landfill gas flow rate of 3,000 scfm, the flare system shall require a maximum landfill gas pressure of 10 inches of water column.

3. The landfill gas flare shall be capable of achieving a minimum weighted average destruction efficiency of greater than 98 percent of total non-methane organic compounds and meet the requirements of 40 CFR 60.18.

1.05 APPLICABLE CODES AND STANDARDS

A. All equipment edition shall be manufactured in accordance with codes and guidelines as specifically detailed herein and in accordance with applicable portions of the following (latest):

1. Local laws and ordinances.
2. State and Federal laws.
4. National Electrical Manufacturers Association (NEMA)
5. Underwriters Laboratories (UL).
8. American Society of Mechanical Engineers (ASME).
10. Institute of Electrical and Electronic Engineers (IEEE).
11. Instrument Society of America (ISA).
12. Industrial Risk Insurance (IRI).
13. Factory Mutual (FM).
15. Environmental Protection Agency (EPA).
16. Occupational Safety and Health Administration (OSHA).

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation.

B. The equipment shall be delivered on site as fully assembled as transportation will allow. Factory-assembled parts and components shall not be dismantled for shipment unless approved by the ENGINEER.

C. Equipment shall be placed at OWNER designated final location on the landfill property by the CONTRACTOR.

D. Finished surfaces of all exposed openings shall be protected by wooden blanks, strongly built, and securely bolted thereto.

E. Each box or package shall be properly marked to show its net weight in addition to its contents.

1.07 WARRANTY AND GUARANTEES

The CONTRACTOR shall warrant the units being supplied to the OWNER against defects in workmanship and material for a period of two (2) year from the date of equipment acceptance by the OWNER. In the event that the equipment fails to perform as specified, the equipment manufacturer shall promptly repair or replace the defective equipment without any cost to the OWNER (including handling and shipment costs).

1.08 SERVICE AND MAINTENANCE

The CONTRACTOR shall provide five (5) years of blower/flare system equipment maintenance and testing. Maintenance shall be per equipment manufacturer’s standards and schedule to be performed.

PART 2 - PRODUCTS

2.01 GENERAL

A. Equipment shall not have been in service, except for shop tests, at any time prior to delivery. The equipment shall be furnished factory-assembled to the extent possible and ready for installation.
B. Equipment shall be designed and proportioned to have liberal strength, stability, and stiffness and shall be especially adapted for the intended service. Ample room and facilities shall be provided for inspection, repairs, and adjustments.

C. Parts of equipment shall be amply proportioned for all stresses which may occur during operation and for any additional stresses which may occur during fabrication, transportation, handling, and erection.

D. These Specifications are intended to give a general description of what is required, but do not cover all requirements of the equipment as offered. They are, however, intended to cover the furnishing, delivery, and field testing of all materials, equipment, and apparatus as required. Auxiliary equipment necessary for proper operation of the proposed Landfill Gas Blower/Flare System not mentioned in these Specifications shall be furnished.

E. At all levels of performance of the gas system, the sound pressure shall not exceed 85 dbA over a frequency range of 37.8 to 9,600 cycles per second. Measurement shall be made a distance of 3 feet from the outer face of the equipment. The manufacturer shall certify that the equipment furnished for this project does not exceed the specified sound pressure. This written certification shall be submitted with the Shop Drawings.

F. A brass or stainless steel nameplate shall be attached to each piece of equipment in a conspicuous place. The following information shall be plainly marked on the nameplate: name and address of the manufacturer, serial number, model number, pertinent information regarding electrical requirements, size and capacity and any other information necessary for complete identification.

G. If necessary, modifications shall be made in the manufacturer's standard product to make it conform to the specific requirements of the Specifications and to requirements contained in regulations issued by public agencies. Such modifications shall be noted in Shop Drawing submittals.

2.02 GAS HANDLING SYSTEM

A. Blower and Motor:

1. Blower. The blower motor assemblies shall be gas inlet driven, direct drive, multistage centrifugal type exhausts. The blowers shall be designed for and include variable frequency drive (VFD) control. Impellers shall be mounted on one shaft supported on each end by bearings mounted in the outboard bearing housings. The blower shall be built from parts cast in patterns from which previous units have been built and tested. Each blower shall have monitoring ports factory installed in the blower housing leading to the inlet and outlet piping. Blower shall comply with the Criteria in Part 1.04.
2. Each blower motor assembly shall be plumbed and factory mounted on a steel skid and delivered to the site as a complete unit. Neoprene base pads shall be provided. A total of two (2) blowers shall be installed on the skid under this contract. There shall be space and piping and valves for future installation of a third blower.

3. Blower Housings. The housings shall consist of cast iron sections held securely between cast iron inlet and outlet heads with steel tie rods.
   a. No contact shall be made between the shaft rotor and the housing, other than through the bearings. Stuffing boxes shall be used as seals to insure no leakage of gas to the atmosphere or air into the landfill gas.
   b. The inlet and outlet connections shall be drilled and tapped flange pattern per ANSI 1316.1, 125-pound, and shall be an integral part of the heads.
   c. Protective coating on interior and exterior surfaces.

4. Impellers:
   a. Impellers shall be one piece cast aluminum alloy, keyed to the shaft and held by a locknut. Hubs of the impellers shall butt against each other directly or through one piece metal spacers. There shall be ample clearance and tip speed shall not exceed 375 feet per second.
   b. Impellers shall be precisely machine balanced. Vibration shall not exceed 2 mils in the vertical plane measured at the blower bearing housings.

5. Diffusers. Diffuser sections which receive the gas from the impeller and guide the gas to the next impeller shall be provided. The diffusing vanes shall be an integral part of the sections.

6. Shaft. Each shaft shall be made of high grade carbon steel of sufficient diameter to operate below first critical speed.

7. Bearing Housings. Each blower shall be provided with two antifriction bearings. It shall be possible to replace bearings without disconnecting piping or disassembling the compressor casing. Both inlet and outlet bearings shall be designed for a minimum expected life of 10 years of continuous operation.

8. Casing Drains. Each blower stage shall be provided with 3/4-inch NPT diameter casing drains manifold to a single manual shut-off valve.

9. Internal Lining. The blower internals shall be furnished with a factory applied Bisonite, Kynar, phenolic coating or approved equal, minimum 10
mils thick to provide resistance to corrosion by landfill gas. The coating shall be applied to all parts of the blower (excluding aluminum impellers) which come in contact with the landfill gas stream.

10. Motor. Each blower shall be direct-coupled to a horizontal 480V, 3-phase, 60-hertz motor. The blower manufacturer shall be responsible for selecting the proper motor size to suit this equipment, the performance requirements noted herein, and the site conditions. The motor shall be totally enclosed fan-cooled (TEFC) suitable for Class 1, Division 2, Group D, classified location, and UL-approved. Motor shall be rated at 104 degrees F ambient with not more than 131 degrees F rise. Bearings shall be of the antifriction type with an AFBMA L-10 life rating of not less than 25,000 hours.

11. Flexible Couplings and Drives. The blowers shall be connected to the drivers with a suitable flexible coupling. The CONTRACTOR shall check and adjust the alignment of the couplings and drives in accordance with the instructions of the blowers’ manufacturer to a tolerance of plus or minus 2 mils. Couplings shall be covered with base-mounted aluminum or non-sparking metallic guard.

12. Bases. Hot dip galvanized or epoxy-coated steel bedplates of suitable size for mounting blowers and drivers shall be furnished by the blower manufacturer. The blower and motor shall be carefully aligned and then bolted in place. Suitable vibration isolation pads shall be provided under the steel bedplates of the units.

13. Expansion Joints. Expansion joints between the blower inlet and outlet and connected piping shall be flanged concentric reducers sized to match the blower flanges to the connecting piping or valves.

14. Valves:
   a. Butterfly valves located at the inlet of each blower shall be bubble-tight, cast iron body, wafer-type with 316 stainless steel disc and stem, Acetal stem bushing, and Teflon replaceable resilient seat. Interior of valve body and valve disc except for valve seat and stainless steel valve seat ring shall be coated with a fusion bonded, thermostetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be uniformly applied with a minimum thickness of 12 mils. Surfaces shall be clean, dry, and free from rust and grease before coating.
   b. Manual operators shall be gear or lever type. Operators shall have adjustable stop limiting devices to prevent overtravel of disc. Should an adjustment of the disc be required to maintain a bubble-tight seal, this adjustment shall be made externally without removing the operator housing cover.
c. Butterfly valves shall be manufactured by Centerline (936-271-6500), Dezurik (704-844-1100), Appollo Valves (251-602-8333), Valamatic (630-941-7600), ABZ (281-949-2500) or Clow Valve Company (800-829-2569).

d. Check valves on each blower outlet shall be flanged, aluminum body with aluminum flappers with a springless, seatless design as manufactured by Techno Corp. (410-636-3380), US Valve (410-789-0999) or as approved by ENGINEER as equal.

15. Spare Parts. The CONTRACTOR shall provide the following spare parts:

   a. 20 ounces of bearing grease.
   b. One each vacuum and pressure gauge.
   c. Two shaft couplings.

16. Variable Frequency Drive. The CONTRACTOR shall supply a VFD for control of each blower/motor assembly. The VFD shall be capable of controlling the blower motor by either a manually selected speed control or a 4-20 mADC signal provided by the flow rate or vacuum monitoring system. The operator shall be able to select a desired flow rate or vacuum at the operator interface console, and the VFD shall automatically control the blower speed to maintain the selected flow rate and/or vacuum.

17. Blower Controls:

   a. Blower-motor starters and controls are specified in Part 2.05. Starters and controls shall be commonly available parts. The manufacturer shall provide the OWNER with a list of known suppliers for parts not commonly available that are expected to need servicing or replacement.
   b. Blower controls shall be located on the gas handling system skid.

18. Experience:

   a. Blowers shall be manufactured in the United States. Blower manufacturers shall have a minimum of 5 years experience in the design and manufacture of this type of equipment and have a minimum of 25 operating installations on landfills in the U.S.
   b. Acceptable Manufacturers include:

      1) Gardner Denver, Inc. (Hoffman & Lamson Corporation)
         Peachtree City, Georgia
         (800) 982-3009
      2) Houston Services Industries, Inc.
         Houston, Texas 77061
         (713) 947-1623
      3) ENGINEER approved equal.
B. Moisture Separator Assembly (knock-out pot):

1. The knock-out pot shall be completely fabricated from epoxy coated steel or 6061 T6, 6063 T6 and/or 3003 alloy aluminum or HDPE. It shall be of a vertical, cylindrical design with element removal from the top. A 10-inch flanged, covered, inspection port shall be provided in the side near the bottom for manual clean out of accumulated debris. Nozzle flanges shall meet ANSI 125-pound specifications.

2. The demister pad shall be made from non-corrosive mesh and shall be supported on and held down by high open area, stainless steel grid, or equivalent. It shall be mounted flush against the inside of the knock-out pot and have no gaps present. The moisture separator shall be able to remove 100 percent of droplets greater than 6 micron and shall also remove particulates having a density equal to or greater than water which are greater than 6 micron in size.

3. The moisture separator shall have a flow capacity of at least 3,000 scfm. At the design flow rates, temperatures and pressures, the moisture separator shall not have a pressure drop greater than 3 inches water column and shall be capable of withstanding no less than 4.0 pounds per square inch gauge vacuum.

4. Condensate Removal. There shall be a 2-inch IPS pipe coupling in the bottom of the assembly for condensate removal.

5. Pressure Drop Monitoring. There shall be two 1/2-inch NPT ports in the side of the unit, one upstream and one downstream of the demister element material, for the purpose of connecting differential pressure monitoring device(s).

6. High Level Sensor. A high condensate level sensor shall be installed through a ¾-inch penetration below the inlet pipe. Sensor shall be manufactured by Omega, Endress+Hauser or ENGINEER approved equal.

7. Liquid Level Sight Glass. There shall be two (2) ¾-inch penetrations spaced at 8-inches apart in the side of the unit, below the inlet pipe, for the purpose of installing a liquid level sight glass. Sight glass shall be manufactured by Schott Duran, Kenco or ENGINEER approved equal.

8. The moisture separator assembly shall be manufactured in the United States. Manufacturers shall have a minimum of 5 years experience in the design and manufacture of this type of equipment, and have a minimum of 10 units operating successfully on similar landfill gas installations in the U.S.
9. The moisture separator assembly shall be located, installed, and preplumbed on the gas handling system skid.

C. Fasteners. Bolts, nuts, and washers shall be stainless steel.

2.03 INTERCONNECTING PIPING SYSTEM

A. Valves:

1. Butterfly Valves:

   a. All valve shafts shall be connected to operators by use of keys and keyways. The use of compression or friction connection will not be accepted.

   b. The butterfly valves, for low-pressure/vacuum landfill gas services, shall have cast-iron wafer-style valve body with contoured 316 stainless steel disc, Type 316 stainless steel stem, Acetal stem bushing, and viton replaceable resilient seat. Valves shall be bubble-tight at 150 pounds per square inch differential pressure and shall be suitable for installation between ANSI 125-pound flanges.

   c. All butterfly valves shall open left or counterclockwise when viewed from the stem. Manual valve operators shall be either worm gear or lever type. Valves installed greater than 6 feet in height from the ground or skid platform shall be provided with chain wheel operators. All operators shall have adjustable mechanical stop limiting devices to prevent overtravel of disc. Should an adjustment of the disc be required to maintain a bubble-tight seal, this adjustment shall be made externally without removing the operator housing cover. The operator shall be designed such that adjustments can be made under pressure and without the possibility of dirt getting into the operator lubricant. Adjustments through the lower shaft will not be acceptable. Operator components shall, at the extreme operator positions, withstand without damage a pull of 200 lb for handwheel or a torque of 300 ft-lb for operating nuts.

   d. Interior of valve body and valve disc except for valve seat and stainless steel valve seat ring shall be coated with a fusion bonded, thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday-free with a minimum thickness of 12 mils. Surfaces shall be clean, dry, and free from rust and grease before coating.

   e. All butterfly valves shall be manufactured by Centerline, Dezurik, Appollo Valves, Valamatic, ABZ or Clow Valve Company. Replacement parts and valves shall be commonly available.

   f. All exterior surfaces of butterfly valves shall be clean, dry and free from rust and grease before coating. The exterior ferrous parts of
all valves shall be shop primed at the factory with one coat, minimum dry film thickness 1.5 mils of a primer with rust-inhibitive pigments and synthetic resins. Followed by 12 mils minimum dry film thickness of thermo-setting epoxy coating. The color of the coating shall correspond with the color of other components on the skid and shall be approved by the OWNER. Coating shall be replied per manufactures recommendation to any surfaces damaged during installation or transport.

2. Sampling Ports:

a. Gas and pressure sampling ports shall be 1/4-inch barbed fittings with rubber dust caps to match the monitoring ports on the wellheads. Parts shall be commonly available. Sampling ports shall be installed in the following locations:

1) Upstream and downstream of the flame arrestor.
2) Upstream and downstream of the moisture separator at the knock-out pot.
3) Inlet and outlet pipe of the knock-out pot.
4) Inlet pipe to blower.
5) Outlet pipe from blower.
6) Upstream of the mass flow meter.

B. Gas Handling Piping:

1. Piping on the gas handling system skid shall be ASTM A-249 304L/316L stainless steel or ENGINEER approved equal. Piping shall be primed and painted, color to correspond with other components on the skid and shall be approved by the OWNER. Flanges shall be painted cast iron or galvanized steel conforming to ANSI 125-pound specifications. The same specification applies to tees, elbows, wyes, flanges, and other pipe fittings.

2. Inlet pipe flow capacity of at least 3,000 scfm.

3. The gaskets shall be full-face rubber, 1/16 inch to 1/8 inch in thickness, and shall meet the requirements of ANSI Specification A21.11.

4. As specified or as required, pipes and fittings shall be drilled and tapped to receive drainage or other piping or plugs. All holes shall be drilled at right angles to the axis of pipes and fittings.

5. Piping and fittings shall be supported so as to prevent any strain being transmitted between sections and connected equipment and appurtenances. Release of any joint shall result in no transverse piping movement and shall allow easy removal and replacement of any piping component.
C. Drain Line Piping:
   1. The blower drain lines shall be stainless steel pipe. They will tie into a common line for easy connection by others.

D. Fasteners. Bolts, nuts, and washers shall be stainless steel.

2.04 CANDLESTICK FLARE SYSTEM

A. The landfill gas flare system shall be a unitized, modular system including all components for a complete and operational system. The flare shall comply with the Criteria in Part 1.04.

B. The landfill gas flare system shall be pre-piped and pre-wired to the extent possible, requiring minimal field assembly.

C. The landfill gas flare system shall include, but not be limited to, the following components:

   1. Automatic Shut-Off Valve. The valve shall open when prompted by the flare control panel and closed by loss of electrical power, flame failure, or blower failure. It shall be a pneumatically operated butterfly valve, bubble-tight, wafer-style, equipped with a stainless steel disk and Viton seat. The operator shall have a manual override and be equipped as a spring fail close device. It shall close when directed by the logic in less than 5 seconds. The compressed gas necessary to operate the valve shall be supplied by a nitrogen bottle.

   2. Flame Arrester
      a. Flame arrester shall have 125-pound ANSI flanged connections.
      b. The housing construction shall be aluminum. The bank assembly shall be all aluminum and shall be arranged for easy removal from the housing to facilitate inspection and cleaning. The net free area through the bank assembly shall not be less than four times that of the corresponding size pipe.
      c. A second, spare bank assembly shall be provided as a backup to the one installed inside the flame arrester.
      d. Maximum head loss through the flame arrester shall not exceed 2 inches of water column at 3,000 scfm. All grids of the bank shall be arranged for individual removal. The flame arrester shall be UL-approved and manufactured by Whessoe Varec, Enardo, or approved equal.
      e. Equipped with inlet and outlet differential pressure gauge.

   3. Flare Stack. The flare stack shall be constructed from ASTM A53 steel, and shall be of sufficient length to provide an overall flare system height
of approximately 40 feet. Flare construction shall consist of welds conforming to AWS D1.1 standards. The top 5 feet of the stack/burner tip shall be constructed of 304 stainless steel.

4. Burner. The burner unit shall be constructed of 304 stainless steel. It shall consist of the burner nozzle, vanes, and impingement assembly. It shall be designed such that the full range of flow rates, as specified herein, shall combust without causing either flame yellowing, flame lift-off, or flashback, and shall perform according to the destruction and reduction efficiency requirements listed earlier in this specification.

5. Windshield. The flare windshield shall be constructed of 310 stainless steel. The windshield shall extend at least 2 feet above landfill gas exit.

6. Propane Pilot System. Removable pilot assembly shall include pressure regulator, pressure indicator, solenoid valve, manual shutoff valve and pilot gas pressure manometer port. CONTRACTOR shall provide two (2) 100 pound L.P. bottles equipped with fuel gauges and regulators arranged such that one bottle can be removed from the system for re-filling without affecting system operation.

7. Electronic Spark Ignition. 5,000 volt electronic igniter assembly removable from outside the flare without disconnecting conduit or wiring. Igniter assembly shall be commonly available parts. The manufacturer shall provide a list of parts not commonly available and known suppliers.

8. Flare Mounting System. This system shall be manufactured of ASTM A36 carbon steel members, which shall be welded to the structure using AWS D1.1 methods. Sufficient steel gusset material shall be incorporated in the structure to prevent erratic vertical alignment of the flare pipe. Flare mounting shall provide anchorage to a concrete foundation, constructed by others, to prevent overturning and provide resistance against seismic forces “Seismic Site Classification C” and minimum 140 MPH wind forces.

CONTRACTOR shall provide to the ENGINEER North Carolina licensed Professional Engineer sealed design calculations and drawings for the flare mounting system and anchorage.

9. Finish. Carbon steel base of the flare stack shall be sand-blast prepared and primed. Sand blasting shall be to SP-6 guidelines. An inorganic zinc primer, solvent or water based, with a minimum of 14 lbs metallic zinc content per gallon shall be applied. Minimum application will involve 1 coat, 4 MDFT cover. Acceptable coating suppliers include Ameron Protective Coatings, DuPont Chemical Company, Glidden Company, and Koppers Company.
10. Fasteners. Bolts, nuts, and washers shall be stainless steel or hot-dipped galvanized.

11. Condensate Drains. Flare stack and flame arrester shall be equipped with drain ports for easy connection by others.

2.05 CONTROL SYSTEM

A. Control Panel. The CONTRACTOR shall provide all materials and equipment to fabricate and pre-wire the Control Panels. The CONTRACTOR shall be responsible for providing all instrumentation integral to the construction of the panels and other instrumentation for the system. The Blower Control Panel and Flare Control Panel can be provided either as a common panel or as separate but integrated panels. The CONTRACTOR shall provide all labor, materials, and equipment to shop test the entire blower/flare station system with control panels connected, before delivery to the site.

B. The control system shall be designed and manufactured as an outdoor system. A weather/heat shield shall be provided to protect the control panel against radiated heat (solar and/or flare) and rain.

C. The control panel for the landfill gas blower/flare system shall be compliant with NEMA 4X specifications at a minimum. The main control panel shall be sized to accommodate the required controls and shall be provided with a swing out panel, and with a NEMA 4X compliant window in the door through which status annunciators, recorder, controller, etc. may be viewed. The panel shall include, but not be limited to, the following components:

1. Electrical connections and controls for 2 motors and for a future 3rd, outlets, fixtures, controls, and devices, etc., included with the system. The panels shall be pre-wired to receive incoming power from the electrical service equipment and with suitable junction boxes for all outgoing conduit and cable to equipment.

2. A control center to receive all the signals from the various safeties, controls and monitoring equipment, and to automatically control all the various components of the system.

3. The control panel shall be sized to accommodate a laptop personal computer.

4. The control panel shall be air conditioned to maintain the internal panel temperature between 55°F and 85°F.

5. Local touch screen, no less than 6-inches in size. Must be Ethernet and USB ready.
6. Control of the flare shall be achieved using a Programmable Logic Controller (PLC).

a. Approved PLC manufacturers are:

1) Koyo/Automation Direct (DL260)
2) Allen-Bradley (SLC505E-Ethernet Enhanced)
3) ABB (AC500-XC)
4) ENGINEER approved equal

b. PLC HARDWARE

1) All control circuits will use 24VDC unless otherwise specified.
2) Minimum of 2 Racks with 9 slot count.
3) RACK1 will be used for Analog IO ONLY.

c. Minimum 8 channel analog input and output cards are required. Mixed input/output cards will be accepted, but the combined inputs and outputs must be equal to or greater than 10 points.

d. All analog channels are required to be wired through analog isolators. Acceptable isolators are Automation Direct part numbers:

1) FC-11
2) FC-33

e. If the first rack is filled to capacity then the 2nd rack can be used to accommodate the additional analog cards.

1) The inputs cards will be installed before the output cards.
2) RACK2 will be used for Discrete IO ONLY.

f. Minimum 16 point input and output cards are required.

g. ZIP link modules will be required for both input and output cards.

h. All input Cards will be connected to ZIPLINK: ZL-CM16L24

i. All output cards will be connected to ZIPLINK: ZL-CM16RL24A

j. The inputs cards will be installed before the output cards.

k. All analog IO will be terminated to terminal blocks.

1) Minimum of 20% spare slot space will be required.
2) Ethernet card will be installed in the last slot of the CPU rack.
3) CPU rack will contain at least 2 empty slots.
4) D2-FILL will be used to fill spare slots.

7. COMMUNICATION PROTOCOL

a. The PLCs will communicate via the Ethernet card. The CONTRACTOR will provide windows based drivers that correspond with PLCs.

8. FUNCTIONALITY

a. The operator will have remote data acquisition and alarm notification ability from a SCADA system via Windows based PC communications driver.

1) The CONTRACTOR will provide a licensed copy of SCADA system.
2) Evidence shall be provided to ENGINEER that SCADA system has been used for at least 20 landfill gas blower/flare systems.
3) The software at a minimum should be capable of providing remote access and notification capabilities for at least all items mention in this section.

b. The PLC shall be programmed to attempt four (4) restarts before an alarm notification is initiated.

c. The PLC shall be programmed to allow only 4 hours/day of flare manual mode operation.

d. The PLC program shall be written to allow the operator to:

1) Select flow and/or vacuum control.
2) Select the thermocouple used for temperature control.
3) The operator shall have the ability to adjust the set points.
4) System shall monitor all points and provide control as required by the OWNER.

9. All control power shall be 24 VDC. Where applicable, a 24 VDC relay shall be used to interface with other control voltages.

10. An operator control panel to allow either manual or automatic selection for the control of the operating components of the system.
a. Flare controls shall include trouble light contacts, automatic start/stop for pilot ignition, controllers, spark plugs, ultraviolet (UV) scanner, flame safeguard controller, thermocouples, timers, and other components necessary for a complete, operational automatic system. Automatic operation shall be achieved through adjustable timers, relays, and switches activated by the thermocouples and UV scanners.

b. Blower controls for two (2) blowers and space and wiring for a future third blower mounted on a common skid with the control panel. Blower controls shall include ITE Type ETI, or as approved by the ENGINEER as equal motor circuit protectors, motor starters, voltage monitors, dual set point ammeter switch gauges with flow indication (obtained from blower manufacturer), running time meters, hand-off-automatic switches, and green push-to-test run lights housed in a NEMA 4 enclosure. A time delay will prevent blower restart until sufficient time has elapsed for the shaft to stop spinning.

The blower controls shall provide for one or both blowers operation through a selector switch (Blower 1, Blower 2). During automatic startup of more than one blower, a time delay will prevent multiple blowers from starting simultaneously.

11. Safeties. The system shall be equipped with the following safeties as a minimum:

a. Blower-motor overcurrent shall cause system shutdown.
b. Blower-motor undercurrent (surge) shall cause system shutdown.
c. Flame failure shall cause system shutdown.
d. High temperature shutdown.
e. Low temperature shutdown.
f. High temperature flashback shutdown.
g. High blower bearing temperature shutdown.
h. High liquid level in knock-out pot shutdown.
i. Inlet valve failure.
j. Low methane content shutdown.

12. Control Panel Face-Mounted Devices. The system shall be equipped with the following control panel face-mounted devices or displays as a minimum:

a. Alarm and shutdown indicating lights.
b. Blower motor current meter.
c. LFG and supplemental fuel flowmeters.
d. Hand/off/auto switches for the blowers.
e. Hand/off/auto switches for the flare.
f. Run indicators for the blower.
g. Total elapsed run time for each blower.
h. Flame failure indicator for the flare.
i. Automatic shut-off valve failure indication.
j. Inlet Valve Failure Indication.
k. Safety Shutoff Switch.
l. Blower Bearing Temperature Gauges.
m. Supplemental Gas Flow Indication.
n. Digital data recorder.

D. Auxiliary Equipment

1. Local alarm light shall be provided and mounted near the control panel in a location where it is highly visible.

2. Two (2) outdoor receptacles (120V) with ground fault protection shall be provided at the flare/blower control panel rack.

3. Three phase surge suppression system.

4. Two (2) motor starters with thermal overloads. Space and wiring for a third starter.

5. 480 VAC three phase to 120/240 VAC single phase transformer.

6. 120/240 VAC single phase protected load center with distribution breakers.

7. Fully wired control panel system (requires connection to field devices by others).

8. 120 VAC surge suppression system.

9. 24 VDC surge suppression system.

10. RS-232/Communications surge suppression system.

11. UL panel construction.

12. PLC supervision and logical control system, both digital and analog.


14. SCADA system from 3rd Party Vendor.

15. Cellular modem for remote access.
16. Control system uninterruptible power supply rack mounted in NEMA 4 enclosure, minimum 24 hour power supply.

E. Remote Data Acquisition System:

1. General. The system shall receive input from the various monitored items. Upon such change, the system shall automatically notify up to sixteen pre-selected email addresses and/or text message phone numbers. The system shall also be capable of reporting the status of all monitored items upon receipt of an inquiry. The system shall be initially programmed by the CONTRACTOR with the email addresses and/or telephone numbers provided by the OWNER.

2. Equipment Description:

a. Advanced microprocessor that collects and transmits data to a website for remote monitoring, issue alarms, permanent storage, and ability to generate graphs, charts, and reports with the data. Alarm conditions are displayed immediately on the internet website along with sending text or electronic message notification transmitted by both or either cellular and telephone. Contain minimum 10 analog input channels, 12 digital input channels, and 4 output channels. The system shall make provisions for the following inputs:

<table>
<thead>
<tr>
<th>Analog Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel 1: Gas Flow</td>
</tr>
<tr>
<td>Channel 2: Flare Temp</td>
</tr>
<tr>
<td>Channel 3: Inlet P</td>
</tr>
<tr>
<td>Channel 4: Outlet P</td>
</tr>
<tr>
<td>Channel 5: Spare</td>
</tr>
<tr>
<td>Channel 6: Spare</td>
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<tr>
<td>Channel 7: Spare</td>
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<tr>
<td>Channel 8: Spare</td>
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<tr>
<td>Channel 9: Spare</td>
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<tr>
<td>Channel 10: Spare</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Digital Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel 1: Pilot P</td>
</tr>
<tr>
<td>Channel 2: Main P</td>
</tr>
<tr>
<td>Channel 3: Flame Arres</td>
</tr>
<tr>
<td>Channel 4: Automatic B</td>
</tr>
<tr>
<td>Channel 5: Gas Blower</td>
</tr>
<tr>
<td>Channel 6: Gas Blower</td>
</tr>
</tbody>
</table>
Channel 7: Spare
Channel 8: General Alarm
Channel 9: Moisture Separator High Level
Channel 10: Spare
Channel 11: Spare
Channel 12: Spare

b. The unit shall permit the user to program, right from the keyboard or remotely via the internet website, the following functions:

1) Each fault channel to a normally open or closed mode.
2) Alarm response delay: 0.1 to 999.9 seconds, with different delays being assignable to different alarms.
3) Delay between alarm notifications: 0.1 to 99.9 minutes.
4) Alarm reset time: 0.1 to 99 hours, or “No Reset”.
5) Number of message repetitions: 1 to 20 repetitions.
6) Notification test: allows the unit to place a round of test calls when enabled and also at subsequent intervals until this function is disabled.
7) Remote arming and disarming of system.
8) Notification list.

c. Normal power shall be 24 volts DC. The unit shall contain its own gel cell rechargeable battery which shall automatically be kept charged when AC power is present. The system shall operate on battery power for a minimum of 24 continuous hours in the event of AC power failure.

d. The unit shall be provided with a NEMA 4 enclosure, which shall be mounted inside the blower skid main control panel or its separate panel.

F. PUSHBUTTON/SELECTOR SWITCHES, CONTROL UNITS, AND PANEL LIGHTS

1. Manufacturers:
   a. Square D
   b. Cutler-Hammer
   c. Allen Bradley
   d. Or equal

2. Construction:
   a. Heavy duty
   b. Oiltight
   c. Base mounted or
   d. Flush panel mounted
3. Pushbuttons:
   a. Flush head unless otherwise specified elsewhere.
   b. Control blocks:
      1) Double break silver contacts
      2) AC ratings: 7200 make, 720 break
      3) Single-pole-double-throw or double-pole-double-throw
      4) Up to six (6) tandem blocks
   c. Maintained contact unless otherwise specified elsewhere.
   d. Non-illuminated.
   e. Legend plates as required for type of operation or as specified elsewhere.

4. Selector Switches:
   a. Maintained position unless otherwise specified elsewhere.
   b. Contact blocks:
      1) Double break silver contacts
      2) AC ratings: 7200 make, 720 break
      3) Single-pole-double-throw or double-pole, single-throw
      4) Up to six (6) tandem blocks
   c. Operators:
      1) Number of positions as required or specified elsewhere
      2) Standard knob type of operation unless otherwise specified elsewhere

5. Panel lights:
   a. Transformer type
   b. LED
   c. Colored lenses as specified elsewhere
   d. Interchangeable lenses
   e. Legend plates as required or as specified elsewhere
   f. Press-to-test feature.

6. Nameplates:
   a. Engraved laminated plastic
   b. Letters 3/16-inch high
c. White letters on black background
d. Identity per equipment controlled

G. POWER SUPPLIES
1. 120 VAC 60 HZ power input
2. Integral PI filter
3. On/off circuit breaker
4. 0.2% load regulation
5. Short-circuit limit protection
6. Crowbar overvoltage protection

H. CONTROL RELAYS
1. Manufacturers:
   a. Potter and Brumfield
   b. IDEC
   c. Or equal
2. Operating Data:
   a. Pickup time: 13 ms maximum
   b. Dropout time: 10 ms maximum
   c. Operating Temperature: -45 deg to 70 deg C
3. Contacts:
   a. Gold flashed fine silver, gold diffused
   b. Form C
   c. 110 VAC
   d. Minimum 2 amp rating
4. Rated at 10 million operations.
5. Plug-in sockets.

2.06 IGNITION PROCEDURE
A. The pilot and main flame shall be controlled by ultraviolet (UV) scanner (optional), thermocouples, solenoids, relays, and timers to perform the following functions:
1. Spark ignition of propane gas creates pilot flame that ignites LFG main flame.

2. When pilot is successfully ignited, blower(s) and actuator valve on skid inlet are activated.

3. When main flame is successfully ignited (as detected by a UV scanner or thermocouple), pilot propane gas is shut off.

4. If pilot is not ignited after three attempts within the pre-selected time interval (as set on the timer), the pilot is shut off, a trouble light is illuminated and alarm sent (via the autodialer).

5. If main flame is not ignited within the pre-selected time interval, the pilot is shut off, and the trouble light is illuminated and alarm sent.

6. If the main flame fails, the blower(s) is turned off, and the inlet valve is closed and alarm sent.

7. In the event of loss of flame, the flare and blower(s) shall automatically restart after an adjustable time delay of 5 to 15 minutes.

B. In the event of a power failure, the flare and blowers shall automatically restart when power resumes after an adjustable time delay of 5 to 15 minutes.

2.07 AUXILIARY EQUIPMENT

A. Gas Mass Flow Meter.

1. Flow Meter. The mass flow meter shall consist of a single point drive system and remote electronics. The method of operation shall utilize a varying delta P signal. The flow meter shall have a digital LCD readout showing instantaneous flow located at the unit and at the flare control panel and provide a record of gas flow to the flare continuously or at maximum intervals of 15 minutes. Flow shall be indicated on the same paper and digital chart recorders as temperature. The unit shall be pressure and temperature corrected. The gas mass flow meter shall be manufactured by Yokogawa or ENGINEER approved equal. The flow meter shall provide data to a remote recorder. The flow meter will be installed by others.

2. Digital Data Recorder. The digital data recorder shall continuously record temperature, flow, and knock-out pot inlet vacuum at a minimum. It shall have USB flash drive capabilities and a minimum of 6 input channels. The digital recorder shall be manufactured by Yokogawa Model DX Advanced DX 1000, installed in the control panel unit.

3. A flow totalizer shall be included in the touch screen control panel.
B. The system shall be equipped with the following gauges as a minimum:

1. Pressure, Vacuum, and Differential Gauges: Gauges shall be Capsuhelic gauges as manufactured by Dwyer Instruments, Inc. or ENGINEER approved equal. Gauges shall read "INCHES OF WATER." Graduations shall be at intervals of 1 inch of water.
   a. Flame arrester pressure drop indicator. Gauge shall be capable of measuring 0 to 15 inches of w.c. differential pressure.
   b. Moisture separator pressure drop indicator. Gauge shall be capable of measuring 0 to 15 inches of w.c. differential pressure.
   c. Blower vacuum and pressure indicators. Vacuum gauges shall be capable of measuring 0 to 80 inches of w.c. Pressure gauges shall be capable of measuring 0 to 30 inches of w.c.
   d. System vacuum indicator. A vacuum gauge shall be mounted upstream of the knock-out pot as indicated on the Plans. It shall be capable of measuring 0 to 80 inches of w.c.
   e. System pressure indicator. A pressure gauge shall be mounted downstream of the blowers’ outlet valves as indicated on the Plans. It shall be capable of measuring 0 to 30 inches of w.c.

2. Blower inlet and outlet temperature indicators.
   a. Dial-type temperature gauges shall be provided at the inlet and outlet of each blower. The gauges shall range from 0 to 200 degrees F.

2.08 SPARE PARTS

A. The Vendor shall provide the following spare parts:

1. 20 ounces of LAMSON No. 5 Grease, if Lamson blower is used, or equal.
2. One each vacuum, pressure and temperature gauge.
3. One shaft coupling.
4. Two thermocouples.
5. Indicator light package.
6. 1 ultraviolet scanner.
7. One set fuses/relays.
8. Two igniter assemblies.
9. One extra bank assembly for the flame arrestor.

PART 3 - EXECUTION

3.01 MANUFACTURING

A. The CONTRACTOR shall provide the following items on a steel skid:
   2. Moisture Separator Assembly (knock-out pot).
   3. Piping and fittings.
   4. Valves.
   5. Control and electrical panels.

B. The flame arrester shall be provided for installation on the flare inlet pipe.

C. The gas mass flow meter shall be provided for installation.

D. All skid-mounted equipment shall be installed plumb and perpendicular to piping ready for easy installation.

E. Marred or abraded surfaces of equipment shall be cleaned and refinished to match original finish.

F. The CONTRACTOR shall coordinate the electrical work with the equipment manufacturer and panel fabricator to provide a complete, integrated, and automatic system.

3.02 START-UP AND TESTING

A. Factory Test. Prior to shipment, the entire station equipment and all circuits, control systems and devices, including all alarm signals, shall be tested. All apparatus shall be cleaned, adjusted and made ready for shipment after testing. Complete test reports shall be provided to the ENGINEER which show that all system controls operated correctly prior to shipment.

B. A factory representative with complete knowledge of proper operation and maintenance shall be provided for a minimum of three (3) 8-hour days to instruct representatives of the OWNER on proper operation and maintenance of the blower/flare system. If there are difficulties in operation of the equipment, additional service shall be provided at no cost to the OWNER until system is fully operational.
C. Functional and Validation Tests. Upon completion of the installation, functional and validation tests shall be performed by the CONTRACTOR with the assistance of the manufacture, in the presence of the ENGINEER.

D. Calibrate mass flow meter once installed and provide calibration certification to ENGINEER.

3.03 DEMONSTRATIONS

A. Demonstrations shall be separate from the installation, startup, and equipment adjustment services described in 3.02 above. System operations under all alarm conditions shall be demonstrated. Some of these alarm conditions may be simulated (e.g., via electrical jumpers) for demonstration purposes.

B. The Demonstration Test shall demonstrate that all items of these Specifications have been met by the equipment as installed and shall include, but not be limited to, the following tests:

1. That the system has been properly installed and all parts are in correct alignment.

2. That the system performs satisfactorily during continuous operation for at least three (3) consecutive days.

3. That there are no mechanical or electrical defects in any of the parts.

4. That the controls perform satisfactorily, including automatic starting and stopping, manual operation, safety shutdowns, notification operation, and under all alarm conditions.

END OF SECTION
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