



**ATLANTIC COUNTY UTILITIES AUTHORITY
INSTRUCTIONS TO BIDDERS AND TECHNICAL SPECIFICATIONS**

**RICHARD S. DOVEY, PRESIDENT
OREN R. THOMAS, IV, RPPO, QPA, PURCHASING MANAGER**

BID NUMBER: 2022-SW-07

BID TITLE: REBID GEOTHERMAL WELLFIELD REPLACEMENT

BID RELEASE DATE: DATE: JUNE 8, 2022

**BID OPENING DATE: DATE: JULY 8, 2022
11:00 A.M., LOCAL TIME**

Physical Address:

Atlantic County Utilities Authority
6700 Delilah Road
Egg Harbor Township, NJ 08234-5623
Phone (609) 272-6950
Fax (609) 272-7333

Mailing Address:

Atlantic County Utilities Authority
P. O. Box 996
Pleasantville, NJ 08232-0996

**THOMAS R. GANARD, P.E.
N.J. LICENSE NO. 35261**

THE ATLANTIC COUNTY UTILITIES AUTHORITY IS RESPONSIBLE FOR ENHANCING THE QUALITY OF LIFE THROUGH THE PROTECTION OF WATERS AND LANDS FROM POLLUTION BY PROVIDING RESPONSIBLE WASTE MANAGEMENT SERVICES. THE AUTHORITY IS AN ENVIRONMENTAL LEADER AND WILL CONTINUE TO USE NEW TECHNOLOGIES, INNOVATIONS AND EMPLOYEE IDEAS TO PROVIDE THE HIGHEST QUALITY AND MOST COST EFFECTIVE ENVIRONMENTAL SERVICES.

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ATLANTIC COUNTY UTILITIES AUTHORITY

NOTICE TO BIDDERS

PLEASE TAKE NOTICE that the Atlantic County Utilities Authority will receive sealed bids, pursuant to the Local Public Contracts Law of the State of New Jersey, N.J.S.A. 40A:11-1 et seq. at the ACUA Administration Building, 6700 Delilah Road, Egg Harbor Township, N.J. as follows:

BID NO. 2022-SW-07

BID NAME: REBID Geothermal Wellfield Replacement

DATE AND TIME OF BID OPENING: JULY 8, 2022
11:00 AM, Local Time

At the aforementioned date, time and place, said bids will be publicly opened and read aloud.

Specifications and bid documents may be obtained online at the following web address <http://www.acua.com/bids.aspx> Plans may also be picked up at the office of the Purchasing Manager upon payment of **\$100.00 (One Hundred dollars)** for each document, and the amount paid is non-refundable.

All bids must be accompanied by a certified check or bid bond in the amount of 10% of the total bid, not to exceed \$20,000.00. Bids must be submitted in duplicate and enclosed in a sealed envelope addressed to the "Purchasing Manager, Atlantic County Utilities Authority", hand delivered to 6700 Delilah Road, Egg Harbor Township, NJ 08234, or mailed to P.O. Box 996, Pleasantville, NJ 08232-0996" and clearly marked on the outside as follows:

SEALED BID – BID # 2022-SW-07
REBID GEOTHERMAL WELLFIELD REPLACEMENT

Bidders are required to comply with the requirements of N.J.S.A. 10:5-31 et seq, and N.J.A.C. 17:27 et seq.

Bids that arrive late due to the fault of U. S. Postal Service, United Parcel Service, DHL, FEDEX, any delivery/courier service, or any other carrier of any sort are still considered late and shall not be accepted by the Authority. Such bids shall remain unopened and will be returned to the submitting entity upon request.

SCOPE OF WORK: Bids are solicited for the installation of a new geothermal wellfield at the Administration Building at the ACUA Hanemann Environmental Park in Egg Harbor Township, NJ. The work includes but is not limited to the installation of the new wellfield, circulating piping and connection into the existing mechanical system inside the ACUA Administration Building. All work to be performed according to the plans and specifications.

Site visits may be scheduled by calling the ACUA Engineering Department at 609-272-6959. Bidders are cautioned to obtain and review the plans and specifications well in advance of this site visit.

Questions will be accepted in writing until 4:30 PM local time, on **June 23, 2022**. Questions may be faxed to the Purchasing Department at: 609-272-6936 or emailed to: rthomas@acua.com. Bidders are cautioned to obtain and review the plans and specifications well in advance of this date. The Authority will consider all requests for technical modifications to the plans and specifications and will, if necessary, issue an addendum.

Addenda will be issued only in the exceptional case where, in the Authority's sole judgment, the issue involved is of sufficient importance to materially affect the bidding process.

The bid opening will be made available for viewing on Zoom at the following link:
<https://us06web.zoom.us/j/89883243447?pwd=dU1pUklaeWdieXhEdjNtWStib2JwZz09>
Passcode: 143690

ATLANTIC COUNTY UTILITIES AUTHORITY
RICHARD S. DOVEY, PRESIDENT
BY: OREN R. THOMAS, IV, RPPO, QPA, PURCHASING MANAGER

INSTRUCTIONS AND INFORMATION FOR BIDDERS – REBID GEOTHERMAL WELLFIELD REPLACEMENT

OWNER: Atlantic County Utilities Authority
1801 Absecon Boulevard
Atlantic City, New Jersey 08401
Marvin Embry, Chairman
Richard S. Dovey, President
(609) 272-6950

Engineer: Thomas R. Ganard PE, Chief Engineer
Atlantic County Utilities Authority
PO Box 996, Pleasantville, NJ 08232-0996

Solicitor: Nehmad Davis & Goldstein P.C.
4030 Ocean Heights Ave.
Egg Harbor Township, NJ 08234

USE OF TERMS: For purposes of these Specifications, the term "Bidder" refers to the person or entity submitting a bid on this contract, and the term "Contractor" refers to the entity or entities to whom the contract is awarded. The term "Owner" or "Authority" refers to the Atlantic County Utilities Authority. The term "Contract Documents" refers to all documents made a part of this Specification, including all plans, drawings and addenda, and shall also include as the context may indicate all bonds, policies of insurance, and other documents required to be provided by the contractor after award of contract. References to the singular shall include the plural, and the masculine shall include the feminine and neutral, as the context may indicate.

CAUSES FOR REJECTING BIDS: Bids may be rejected for any of the following reasons:

- All bids pursuant to N.J.S.A. 40A:11-13.2;
- If more than one bid is received from an individual, firm or partnership, corporation or association under the same name;
- Multiple bids from an agent representing competing bidders;
- The bid is inappropriately unbalanced;
- The bidder is determined to possess, pursuant to N.J.S.A. 40A:11-4b, Prior Negative Experience; or,
- If the successful bidder fails to enter into a contract within 21 days, Sundays and holidays excepted, or as otherwise agreed upon by the parties to the contract. In this case at its option, the Authority may accept the bid of the next lowest responsible bidder. (N.J.S.A. 40A:11-24b)

LOCATION AND SCOPE OF THE WORK

LOCATION OF WORK: The work to be Bid is located at the **ACUA Hanemann Environmental Park, 6700 Delilah Road, Egg Harbor Township, NJ**

SCOPE OF WORK: Bids are solicited for the installation of a new geothermal wellfield at the Administration Building at the ACUA Hanemann Environmental Park in Egg Harbor Township, NJ. The work includes but is not limited to the installation of the new wellfield, circulating piping and connection

into the existing mechanical system inside the ACUA Administration Building. All work to be performed according to the plans and specifications.

Each bid submitted must be complete in that it shall include all material and work required to completely perform the contract. The appropriate bid forms for each contract to be bid shall be completed in their entirety and each bid shall be submitted with all attachments.

AWARD AND EXECUTION OF CONTRACT & COMPLETION OF WORK

AWARD OF CONTRACT: The low or lowest bid will be determined only by comparison of those bids which are considered responsive to the specifications. Non-responsive bids will be ignored for this purpose. Award of contract will be made to the lowest responsible bidder in accordance with the Local Public Contracts Law of the State of New Jersey.

TIME FOR AWARD AND EXECUTION OF CONTRACTS: The Owner shall award the contract or reject all bids within sixty (60) days after the bid opening date and may, with the consent of the affected bidders pursuant to law, extend this time if necessary. All bid security except the security of the apparent three (3) lowest responsible bidders shall be returned unless otherwise requested by the bidder within ten (10) days after the opening of bids (Sundays and holidays excepted) and the bids of such bidders shall be considered as withdrawn. The bid security of the remaining unsuccessful bidders shall be returned within three (3) days (Sundays and holidays excepted) following the awarding and signing of the contract and approval of the contractor's performance bond.

The bidder to whom the award is made will be required to execute a written contract with the Owner and to furnish appropriate surety bonds as specified, within ten (10) days after notification of the award of contract. The contract shall be in the form included in the Contract Documents. If the bidder shall fail or refuse to sign a contract and provide necessary bonds within ten (10) days of notification of award of contract and request therefore by the Owner, the Owner may execute upon the bid bond or take possession of the funds otherwise provided as bid security. In the event that a contract is signed, and all specified bonds are supplied, the bid bond or check shall be returned to the bidder.

TIME OF COMPLETION: Contractor shall fully complete the work within the time stated in the Contract Documents for completion of work. The Contract Time shall commence on the date set forth in the Notice to Proceed or as otherwise provided by the General Conditions.

MATTERS PERTAINING TO THE BIDDING PROCESS

EXAMINATION OF CONTRACT DOCUMENTS AND WORK AND UNFORESEEN CONDITIONS: Bidders are required to satisfy themselves, by examination of the Contract Documents and physical examination of the site of the work, as to all existing conditions and all actual or potential difficulties likely to be encountered in the performance of the work. Site visits may be scheduled by contacting the Engineering Department at 609-272-6907.

It shall be the responsibility of the bidder to verify the types of materials which may be encountered during construction. The bidder or contractor shall not be permitted to use any of the information obtained by him in such determination and examination as a basis or ground of claim or demand of any nature against the Owner arising from or by reason of any variance which may exist between the materials found by his examination and actual materials encountered during the performance of the work.

No plea of ignorance of conditions that were known or should have, in the exercise of reasonable diligence in examining the work prior to bidding, been known to the bidder at the time of bidding will be accepted as an excuse for the failure or omission on the part of the contractor to fulfill in every respect all of the requirements of the contract, nor will the same be accepted as a basis for any claim whatsoever for extra compensation or for an extension of time.

CONTENTS OF BID PACKAGE: All bids shall be enclosed in securely sealed envelopes and addressed to:

Atlantic County Utilities Authority
6700 Delilah Road, Egg Harbor Township, NJ 08234
PO Box 996, Pleasantville, NJ 08232-0996

and endorsed on the front of the envelope as:

BID # 2022-SW-07
REBID GEOTHERMAL WELLFIELD REPLACEMENT

All bid packages shall include:

1. **Proposal Form(s):** Bids shall be set forth on the forms provided and all blank spaces shall be properly filled in. Bidders shall state the amount bid in both words and figures. Bidders shall use the proposal forms provided by the Authority or true copies thereof. Substitute forms will not be considered conforming. In the event of discrepancy between the prices quoted in words and those quoted in figures, the words shall control. Bidders shall acknowledge receipt of Addenda transmitted after they received the specification package, in the space provided. All required forms must be completed and furnished as part of the Proposal, and may not be supplied, or changed or supplemented after opening of bids except to the extent specifically recognized in these Specifications. Where a document is required to be notarized, it shall contain the notary's raised seal.
2. **Acknowledgement of Addenda:** Bidders shall acknowledge receipt of Addenda transmitted after they received the specification package, on the form provided as part of these Specifications.
3. **Bid Security and Consent of Surety:** Bid security is required and may be provided either in the form of a certified or cashier's check accompanied by the Bid Guarantee or surety bid bond in the forms provided as a part of these Specifications, in the amount of ten percent (10%) of the Bid, but not to exceed \$20,000. The check or bond of the bidder to whom the contract is awarded shall be retained until the contract is executed and the required performance bond or other security is submitted. The bid bond form supplied as a part of these specifications, which includes the Consent of Surety, must be used if a surety bid bond is to be supplied. If a certified or cashier's check is to be used in lieu of surety bid bond, the Bid Guarantee made a part of these specifications shall be executed and the Consent of Surety portion of the bid bond form must also be executed.

All bidders shall be required to submit with their bid proposal a Certificate (Consent) of Surety with Power of Attorney for the full amount of bid price from a Surety Company authorized to do business in the State of New Jersey, and acceptable to the ACUA stating that it shall without exception provide said bidder with a Performance Bond in the full amount of the bid proposal. This certificate shall be obtained in order to confirm that the bidder to whom the contract is awarded will

furnish Performance and Payment Bonds from an acceptable surety company on behalf of said bidder, any or all subcontractors or by each respective subcontractor or by any combination thereof which results in performance security equal to the total amount of the contract, pursuant to N.J.S.A. 40A:11-22.

The Consent of Surety shall include a valid Power of Attorney authorizing the Attorney-in-Fact to execute the documents. When required, failure to submit a Consent of Surety shall result in the immediate rejection of the bid proposal.

4. **Statement of Ownership Disclosure:** Each bid shall include a fully executed and sworn Statement of Ownership Disclosure form as contained in the bid documents and as required by N.J.S.A. 52:25-24.2. In the event that any bidder is owned by another entity, the required disclosure must be made as to that entity. In the event that the bidder, or the entity owning the bidder, is an entity with no individual owning a 10% or greater interest, that fact must be disclosed. If supplemental sheets are provided as a part of the Ownership Disclosure, the disclosure form itself shall reflect that additional sheets are provided.
5. **Bidders' Qualification Sheet:** The bid shall include the Bidder's Qualification Sheet in the form provided in these specifications. Notwithstanding the contents of the qualification sheet, the Owner may make such inquiry and request such other or further information of the bidder as shall be necessary for it to satisfy itself as to the bidder's technical and financial ability.
6. **Bid Document Checklist:** Bidder shall complete and sign the Bid Submission Document Checklist and include it in the bid submission. For construction bids, failure to submit the checklist is a fatal defect and the bid will be rejected. This document serves as a guide to bidders of the documents that are required to be submitted with the bid.

BID AND PERFORMANCE BONDS; CONSENT OF SURETY: As stated previously, the form supplied in this package, combining bid bond and consents of surety, must be used. If different sureties are offered for the bid bond and performance security, the language contained in the consent of surety supplied must be used in any separate Consent of Surety. The attention of bidders is also specifically directed to the relevant portions of the General and Supplementary Conditions and to the various bond forms made a part of these Specifications.

PERFORMANCE AND PAYMENT BONDS - "CIRCULAR 570" REQUIREMENT: Bidders are advised that performance and payment (labor and material) bonds 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) by the Department of the Treasury and be authorized to transact business in the State of New Jersey.

SEE ITEM 3. ABOVE WITH RESPECT TO COMPLIANCE OF SURETIES IN ACCORDANCE WITH N.J.S.A. 2A:44-143 et seq.

INTERPRETATIONS AND ADDENDA: No interpretation of the meaning of the plans, specifications or other bid documents will be made to any bidder except in accordance with the procedure set forth below, and under no circumstances will any interpretation be made except in writing.

Every request for interpretation of the Specifications and/or the Contract Documents must be in writing and addressed to Oren Thomas, Purchasing Manager, P.O. Box 996, Pleasantville, NJ 08232, and referenced as "Request for Specification Interpretation – **REBID GEOTHERMAL WELLFIELD**

REPLACEMENT". No request for interpretation received less than ten (10) days prior to the date fixed for the opening of Bids can be considered. Interpretations which do not in the Authority's judgment require the issuance of an addendum to the specifications (i.e. answers that do not have the effect of materially changing project requirements) will not be published. Where in the Authority's judgment an addendum is required, it will be issued in accordance with the Local Public Contracts Law.

The bidder shall be responsible for ensuring that his name and address are supplied to the Owner's purchasing agent for purposes of transmittal of addenda. Bidders who receive sets of specifications from sources other than the Owner directly are particularly cautioned to ensure that the Owner receives prompt notification as to the bidder's name and address.

BRAND NAMES, STANDARDS OF QUALITY AND PERFORMANCE: Brand names and/or descriptions used in these specifications are to acquaint bidders with the types of goods and services desired and will be used as a standard by which goods and services offered as equivalent will be evaluated.

When a specification uses "brand name or equivalent," the listed brand name shall serve as a reference or point of comparison for the functional or operational characteristic desired for the good or service being requested. Where a bidder submits an equivalent, it shall be the responsibility of the bidder to document the equivalence claim. Failure to submit such documentation shall be grounds for rejection of the claim of equivalence.

In submitting its bid, the bidder certifies that the goods and services to be furnished will not infringe upon any valid patent or trademark and that the successful bidder shall, at its own expense, defend any and all actions or suits charging such infringement, and will save the Authority harmless from any damages resulting from such infringement.

The contractor shall guarantee any or all goods and services supplied under these specifications. Defective or inferior goods shall be replaced at the expense of the contractor. The contractor will be responsible for return freight or restocking charges.

INSURANCE: The Contractor is required to carry such insurance as is set forth in the Insurance and Indemnity Requirements set forth in these Specifications and to evidence same by the provision of a satisfactory Certificate of Insurance to the Owner at the time of execution of the contract.

AFFIRMATIVE ACTION COMPLIANCE: As required by New Jersey law, the Mandatory Affirmative Action Language- Construction Contracts shall, by reference herein, be made a part of the Agreement between Owner and Contractor. Contractor agrees to execute all forms and provide all certifications necessary to indicate his compliance with New Jersey affirmative action regulations.

AMERICANS WITH DISABILITIES ACT OF 1990: Discrimination on the basis of disability in contracting for the purchase of goods and services is prohibited. Bidders are required to read Americans with Disabilities language that is included as Appendix A of this specification and agree that the provisions of Title II of the Act are made a part of the contract. The contractor is obligated to comply with the Act and to hold the owner harmless.

NEW JERSEY ANTI-DISCRIMINATION: The contract for this bid shall require that the contractor agrees not to discriminate in employment and agrees to abide by all anti-discrimination laws including but not limited to N.J.S.A. 10:2-1 as included in Appendix B of this document.

NEW JERSEY BUSINESS REGISTRATION: Pursuant to N.J.S.A. 52:32-44, the Atlantic County Utilities Authority (“Contracting Agency”) is prohibited from entering into a contract with an entity unless the bidder/proposer/contractor, and each subcontractor that is required by law to be named in a bid/proposal/contract has a valid Business Registration Certificate on file with the Division of Revenue and Enterprise Services within the Department of the Treasury.

Prior to contract award or authorization, the contractor shall provide the Contracting Agency with its proof of business registration and that of any named subcontractor(s). Subcontractors named in a bid or other proposal shall provide proof of business registration to the bidder, who in turn, shall provide it to the Contracting Agency prior to the time a contract, purchase order, or other contracting document is awarded or authorized.

During the course of contract performance:

- (1) The Contractor shall not enter into a contract with a subcontractor unless the subcontractor first provides the Contractor with a valid proof of business registration.
- (2) The Contractor shall maintain and submit to the Contracting Agency a list of subcontractors and their addresses that may be updated from time to time.
- (3) The Contractor and any subcontractor providing goods or performing services under the contract, and each of their affiliates, shall collect and remit to the Director of the Division of Taxation in the Department of the Treasury, the use tax due pursuant to the Sales and Use Tax Act, (N.J.S.A. 54:32B-1 et seq.) on all sales of tangible personal property delivered into the State. Any questions in this regard can be directed to the Division of Taxation at (609)292-6400. Form NJ-REG can be filed online at www.state.nj.us/treasury/revenue/busregcert.shtml.

Before final payment is made under the contract, the Contractor shall submit to the Owner a complete and accurate list of all subcontractors used and their addresses.

Pursuant to N.J.S.A. 54:49-4.1, a business organization that fails to provide a copy of a business registration as required, or that provides false business registration information, shall be liable for a penalty of \$25 for each day of violation, not to exceed \$50,000 for each proof of business registration not properly provided under a contract with a Owner.

DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN: Pursuant to Public Law 2012, c.25, any person, or entity that submits a bid, or proposal, or otherwise proposed to enter into, or renew a contract, must complete the Disclosure of Investment Activities in Iran Form.

AMERICAN GOODS AND PRODUCTS TO BE USED WHERE POSSIBLE: Only manufactured and farm products of the United States, wherever available, shall be used pursuant to N.J.S.A. 40A:11-18.

PREVAILING WAGE RATE: Pursuant to N.J.S.A. 34:11-56.25 et seq. contractors on projects for public work shall strictly adhere to all of the requirements of the New Jersey Prevailing Wage Act. The Contractor shall be required to pay wage rates for all trades for the project & locality and to submit certified payroll records to the ACUA within ten (10) days of the payment of the wages. In the event it is found that any worker, employed by the Contractor or any subcontractor has been paid a rate of wages less than the prevailing wage required to be paid for any of the trades and locality, the ACUA may terminate the Contractor's or subcontractor's right to proceed with the work, or such part of the work as to which there has been a failure to pay required wages and prosecute the work to completion.

The Contractor is also responsible for obtaining and submitting all subcontractors' certified payroll records within the aforementioned time period. The Contractor shall use the certified payroll form provided by the New Jersey Department of Labor and Workforce Development when submitting said certified payrolls. It is the Contractor's responsibility to obtain any additional copies of the certified payroll form to be submitted. The certified payroll form is available at https://www.nj.gov/labor/forms_pdfs/equalpayact/MW-562withoutfein.pdf.

Current prevailing wage rates for construction-related public works projects in Atlantic County can be found at the following website: <https://www.nj.gov/labor/wageandhour/prevailing-rates/public-works/>

Please note that wage rates are subject to frequent changes, therefore the official wage rates will be supplied by the Authority to the Bidder for the date of contract award.

PUBLIC WORKS CONTRACTORS REGISTRATION ACT: No contractor is permitted to bid on this contract unless the contractor is registered pursuant to the New Jersey Public Works Contractors Registration Act, N.J.S.A. 34:11-56.48 et seq. No contractor shall list a subcontractor in the bid proposal unless the subcontractor is also registered pursuant to the Act at the same time the bid is made. No contractor or subcontractor, including a subcontractor not listed in the bid proposal, shall engage in the performance of any work under this contract, unless the contractor or subcontractor is registered pursuant to the Act. Each contractor shall, after the bid is made and prior to the award of the contract, submit to the Owner, the certificates of registration for all subcontractors listed in the bid proposal. Applications for registration shall not be accepted as a substitute with the bid proposal.

NON-DEBARMENT FOR FEDERAL GOVERNMENT CONTRACTS: Pursuant to state law N.J.S.A. 52:32-44.1 any natural person, company, firm, association, corporation, or other entity prohibited, or “debarred,” from contracting with the federal government agencies, shall also be prohibited from contracting for public work in the state of New Jersey. This prohibition also extends to any affiliate organization(s) held by or subject to the control of an entity of that prohibited person or entity.

Prior to awarding any contract for public work, the Owner must obtain written certification from the Contractor through the form below, attesting to their non-debarment from contracting with federal government agencies. Contractors are reminded that they must fill-in the boilerplate information in the certification sections of Parts II through IV regarding their name and type of contracting unit before using the form.

No contract will be awarded to a person or entity debarred from contracting pursuant to N.J.A.C. 7:1D-2 (Debarment, Suspension and Disqualification from Department Contracting). By the act of bidding, the bidder certifies that it has not been debarred, suspended or disqualified pursuant to the above regulation and that it will not contract with any debarred, suspended or disqualified subcontractor.

TRUTH IN CONTRACTING: Bidder should be aware of the following statutes:

1. N.J.S.A. 2C:21-34, et seq. governs false claims and representations by bidders. It is a serious crime for the bidder to knowingly submit a false claim and/or knowingly make material misrepresentation.
2. N.J.S.A. 2C:27-10 provides that a public servant commits a crime if said public servant solicits or receives a benefit directly or indirectly, for an official act performed or to be performed by a public servant, which is a violation of official duty.

3. N.J.S.A. 2C:27-11 provides that a bidder commits a crime if said person, directly or indirectly, confers or agrees to confer any benefit not allowed by law to a public servant.
4. Bidder should consult the statutes or legal counsel for further information.

PRICES: Prices and terms shall not be subject to adjustment for any reason after opening of bids. All prices shall be F.O.B. Destination, freight prepaid, delivered to the Atlantic County Utilities Authority, 1801 Absecon Boulevard, Atlantic City, New Jersey and/or 6700 Delilah Road, Pleasantville, New Jersey, unless otherwise specifically stated in these specifications.

TAXES AND INTEREST ON PAYMENTS: No bid shall provide for State or Federal taxes of any kind or for interest on any amount due from the Authority to any bidder unless expressly permitted by the Specifications. Sales made to any contractor of materials, supplies or services for exclusive use in the performance of this contract are generally exempt from the New Jersey Sales and Use Tax pursuant to N.J.S.A. 54:32B-8.22.

SIGNATURE OF PROPOSALS: All proposals must be signed in ink by a responsible officer of the bidder with authority to make a legally binding commitment on the bidder's behalf. By submitting a bid the bidder is binding itself to enter into a contract on award by the Authority and may not reserve any right to withdraw any bid or to refuse for any reason to enter into an awarded contract. The submission of a bid by any corporation shall constitute a warranty by the corporation that it is authorized to do business in the State of New Jersey, that its corporate charter is in good standing, and that the persons executing bid documents have full authority to do so on the corporation's behalf. A bid submitted by a corporation shall bear the seal of the corporation on the proposal.

RECEIPT OF BIDS: Bids must be received in a sealed envelope at the place for opening of bids before the designated time. Bids received after the indicated time will be returned unopened. No exceptions can be made for any reason, including failure of the Postal Service or of any carrier to make timely delivery of any bid package. Bids transmitted by any process that does not guarantee the integrity of the bid package (e.g. telefax or similar means that does not involve the use of a sealed envelope) are not acceptable.

SUPPLEMENTATION AND WITHDRAWAL OF BIDS: Bidders will not be permitted to supplement or amend bids after submission unless specifically requested to do so by the Owner. Bidders may, however, withdraw and replace their bids before bids are opened by physically collecting the bid from the Authority and substituting a complete new bid package. The substitute bid shall in and of itself conform to all bid requirements and shall, in order to avoid confusion and the potential for duplicate bids, have marked clearly on the outside the words "Substitute Bid--Original Bid Withdrawn" along with the notation as to the contract bid upon. Materials from the first bid (e.g. bid bonds and required forms) will not under any circumstances be considered part of the substituted bid unless the originals of those documents are enclosed in the substituted bid package. Under no circumstances will the Owner consider more than one bid from the same bidder. In the event of an error in the substitution of bids resulting in the submission of multiple bids by the same bidder, the Authority will consider only the bid which is opened first. It is the bidder's responsibility to ensure that a complete and proper substitution of bids is made.

DELAY OR CANCELLATION OF BID OPENING DATE OR TIME: In the event of inclement weather or other emergent circumstances which may prevent the opening of bids on the scheduled date, the Owner will attempt to notify prospective bidders of rescheduling. In the event that the Atlantic County civil courts in Atlantic City are closed or if their opening is delayed (as announced on local radio stations), bidders may assume that any opening of bids for that date has been postponed. The Owner will also, if

practicable, post a sign at the entrance to its Administration Building and GEO Building announcing that the bid opening has been postponed. In the event of rescheduling the Authority shall retain all bids received before the original date and time for opening at the rescheduled date and time. Notwithstanding the fact that bids on several procurements may be listed for opening at the same date and time and that the opening of any particular bid may be delayed by the reading of other bids, acceptance of bids will end at the time for opening of bids established by the Notice to Bidders.

In the event that circumstances exist which are likely to affect all bidders delivering bids on the day of opening (e.g. unusual traffic or weather conditions, difficulties with the bid opening location, etc.) and such circumstances appear in the Owner's sole judgment to necessitate a delay in the opening of bids in order to avoid prejudice to bidders generally who may be affected by these circumstances, the Owner will delay the opening of bids for such period as shall, in its sole judgment, be sufficient to allow a fair opportunity for otherwise timely bidders to provide the Owner with their bids. Difficulties encountered by individual bidders but not common to all (e.g. inclement weather conditions affecting areas other than Atlantic County, an accident or mechanical breakdown on the way to the bid opening, or an inability to supply a required document on time) shall not be cause for delay in the opening of bids. In no event shall any bid be accepted after the announcement that opening of bids has begun.

BID CHALLENGE: Pursuant to N.J.S.A. 40A:11-13, any prospective bidder who wishes to challenge a bid specification shall file such challenges in writing with the ACUA no less than three (3) business days prior to the opening of bids. Challenges filed after that time shall be considered void and having no impact on the ACUA, or award of a contract.

TERMINATION OF CONTRACT: If, through any cause, the contractor shall fail to fulfill in a timely and proper manner obligations under the contract or if the contractor shall violate any of the requirements of the contract, the Authority shall there upon have the right to terminate the contract by giving written notice to the contractor of such termination and specifying the effective date of termination. Such termination shall relieve the Authority of any obligation for balances to the contractor of any sum or sums set forth in the contract. The Authority will pay only for goods and services accepted prior to termination.

Notwithstanding the above, the contractor shall not be relieved of liability to the Authority for damages sustained by the Authority by virtue of any breach of the contract by the contractor and the Authority may withhold any payments to the contractor for the purpose of compensation until such time as the exact amount of the damage due the Authority from the contractor is determined.

The contractor agrees to indemnify and hold the Authority harmless from any liability to subcontractors/suppliers concerning payment for work performed or goods supplied arising out of the lawful termination of the contract by the Authority under this provision.

In case of default by the contractor, the Authority may procure the goods or services from other sources and hold the contractor responsible for any excess cost.

Continuation of the terms of the contract beyond the fiscal year is contingent on availability of funds in the following year's budget. In the event of unavailability of such funds, the Authority reserves the right to cancel the contract.

It is understood by all parties that if, during the life of the contract, the contractor disposes of his/her business concern by acquisition, novation, merger, sale and or/transfer or by any means convey his/her interest(s) to another party, all obligations are transferred to that new party. In this event, the new owner(s)

will be required to submit all documentation/legal instruments that were required in the original bid/contract. Any change shall be approved by the Authority.

The contractor will not assign any interest in the contract and shall not transfer any interest in the same without the prior written consent of the Authority.

For contracts that exceed one year, each fiscal year payment obligation of the Authority is conditioned upon the availability of Authority funds appropriated or allocated for the payment of such an obligation. If funds are not allocated and available for the continuance of any services performed by the bidder awarded the contract (contractor) hereunder, whether in whole or in part, the Authority at the end of any particular fiscal year may terminate such services. The Authority will notify the contractor in writing immediately of any services that will be affected by a shortage of appropriated funds. This provision shall not be construed so as to permit the Authority to terminate the contract during the term, or any service hereunder, merely in order to acquire identical services from another contractor.

Neither party shall be responsible for any resulting loss or obligation to fulfill duties as specified in any of the terms or provisions of a contract if the fulfillment of any term or provision of the contract is delayed or prevented by any revolutions, insurrections, riots, wars, acts of enemies, national emergencies, strikes, floods, fires, acts of God, or by any cause not within the control of the party whose performance is interfered with which by the exercise of reasonable diligence such party is unable to prevent. Additionally, if the fulfillment of any of the terms and provisions of the contract is delayed or prevented by any court order, or action or injunction or other such agreement, the contract shall become voidable by the Authority by notice to the parties.

CONE OF SILENCE: Potential bidders/respondents and their agents must not communicate in any way with the ACUA Officers, Board of Commissioners, or any ACUA staff other than Purchasing personnel in reference or relation to this solicitation. This restriction is effective from the time of bid advertisement until the Board of Commissioners meets to authorize award. Such communication may result in disqualification.

LEGAL ACTION: Any legal action relative to this proposal and any contracts that may or may not be awarded, as a result of this bid, shall be venued in the Superior Court of New Jersey in Atlantic County.

MATTERS PERTAINING TO PERFORMANCE OF THE WORK

CHANGED SITE CONDITIONS: N.J.S.A.40A:11-16.7 Changed conditions clauses for certain local public contracts.

a. In accordance with N.J.S.A. 40A:11-16.7, this Contract is subject to the following differing site conditions provisions:

(1) If the Contractor encounters differing site conditions during the progress of the work of the contract, the Contractor shall promptly notify the contracting unit in writing of the specific differing site conditions encountered before the site is further disturbed and before any additional work is performed in the impacted area.

(2) Upon receipt of a differing site conditions notice in accordance with paragraph (1) of this subsection, or upon the Owner otherwise learning of differing site conditions, the contracting unit shall promptly undertake an investigation to determine whether differing site conditions are present.

(3) If the Owner determines different site conditions that may result in additional costs or delays exist, the contracting unit shall provide prompt written notice to the contractor containing directions on how to proceed.

(4) (a) The Owner shall make a fair and equitable adjustment to the contract price and contract completion date for increased costs and delays resulting from the agreed upon differing site conditions encountered by the Contractor.

(b) If both parties agree that the Owner's investigation and directions decrease the Contractor's costs or time of performance, the contracting unit shall be entitled to a fair and equitable downward adjustment of the contract price or time of performance.

(c) If the Owner determines that there are no differing site conditions present that would result in additional costs or delays, the contracting unit shall so advise the contractor, in writing, and the contractor shall resume performance of the contract, and shall be entitled to pursue a differing site conditions claim against the contracting unit for additional compensation or time attributable to the alleged differing site conditions.

(5) Execution of the contract by the Contractor shall constitute a representation that the Contractor has visited the site and has become generally familiar with the local conditions under which the work is to be performed.

(6) As used in this subsection, "differing site conditions" mean physical conditions at the contract work site that are subsurface or otherwise concealed and which differ materially from those indicated in the contract documents or are of such an unusual nature that the conditions differ materially from those ordinarily encountered and generally recognized as inherent in the work of the character provided for in the contract.

b. In accordance with N.J.S.A. 40A:11-16.7, this Contract is subject to the following suspension of work provisions:

(1) The Owner shall provide written notice to the contractor in advance of any suspension of work lasting more than 10 calendar days of the performance of all or any portion of the work of the contract.

(2) If the performance of all or any portion of the work of the contract is suspended by the contracting unit for more than 10 calendar days due to no fault of the contractor or as a consequence of an occurrence beyond the contracting unit's control, the contractor shall be entitled to compensation for any resultant delay to the project completion or additional contractor expenses, and to an extension of time, provided that, to the extent feasible, the contractor, within 10 calendar days following the conclusion of the suspension, notifies the contracting unit, in writing, of the nature and extent of the suspension of work. The notice shall include available supporting information, which information may thereafter be supplemented by the contractor as needed and as may be reasonably requested by the contracting unit. Whenever a work suspension exceeds 60 days, upon seven days' written notice, either party shall have the option to terminate the contract for cause and to be fairly and equitably compensated therefor.

(3) Upon receipt of the Contractor's suspension of work notice in accordance with paragraph (2) of this subsection, the Owner shall promptly evaluate the contractor's notice and promptly advise the contractor of its determination on how to proceed in writing.

(4) (a) If the Owner determines that the Contractor is entitled to additional compensation or time, the contracting unit shall make a fair and equitable upward adjustment to the contract price and contract completion date.

(b) If the Owner determines that the Contractor is not entitled to additional compensation or time, the Contractor shall proceed with the performance of the contract work, and shall be entitled to pursue a suspension of work claim against the contracting unit for additional compensation or time attributable to the suspension.

(5) Failure of the Contractor to provide timely notice of a suspension of work shall result in a waiver of a claim if the contracting unit can prove by clear and convincing evidence that the lack of notice or delayed notice by the contractor actually prejudiced the contracting unit's ability to adequately investigate and defend against the claim.

c. In accordance with N.J.S.A. 40A:11-16.7, this Contract is subject to the following change in character of work provisions:

(1) If the Contractor believes that a change directive by the Owner results in a material change to the contract work, the Contractor shall so notify the contracting unit in writing. The contractor shall continue to perform all work on the project that is not the subject of the notice.

(2) Upon receipt of the Contractor's change in character notice in accordance with paragraph (1) of this subsection, the contracting unit shall promptly evaluate the contractor's notice and promptly advise the contractor of its determination on how to proceed in writing.

(3) (a) If the Owner determines that a change to the Contractor's work caused or directed by the Owner materially changes the character of any aspect of the contract work, the Owner shall make a fair and equitable upward adjustment to the contract price and contract completion date. The basis for any such price adjustment shall be the difference between the cost of performance of the work as planned at the time of contracting and the actual cost of such work as a result of its change in character, or as otherwise mutually agreed upon by the Contractor and the Owner prior to the Contractor performing the subject work.

(b) If the Owner determines that the Contractor is not entitled to additional compensation or time, the Contractor shall continue the performance of all contract work, and shall be entitled to pursue a claim against the Owner for additional compensation or time attributable to the alleged material change.

(4) As used in this subsection, "material change" means a character change which increases or decreases the Contractor's cost of performing the work, increases or decreases the amount of time by which the contractor completes the work in relation to the contractually required completion date, or both.

d. In accordance with N.J.S.A. 40A:11-16.7, this Contract is subject to the following change in quantity provisions:

(1) The Owner may increase or decrease the quantity of work to be performed by the Contractor.

- (2) (a) If the quantity of a pay item is cumulatively increased or decreased by 20 percent or less from the bid proposal quantity, the quantity change shall be considered a minor change in quantity.
- (b) If the quantity of a pay item is increased or decreased by more than 20 percent from the bid proposal quantity, the quantity change shall be considered a major change in quantity.
- (3) For any minor change in quantity, the Owner shall make payment for the quantity of the pay item performed at the bid price for the pay item.
- (4) (a) For a major increase in quantity, the Owner or Contractor may request to renegotiate the price for the quantity in excess of 120 percent of the bid proposal quantity. If a mutual agreement cannot be reached on a negotiated price for a major quantity increase, the Owner shall pay the actual costs plus an additional 10 percent for overhead and an additional 10 percent for profit, unless otherwise specified in the original bid.
- (b) For a major decrease in quantity, the Owner or Contractor may request to renegotiate the price for the quantity of work performed. If a mutual agreement cannot be reached on a negotiated price for a major quantity decrease, the Owner shall pay the actual costs plus an additional 10 percent for overhead and an additional 10 percent for profit, unless otherwise specified in the original bid; provided, however, that the Owner shall not make a payment in an amount that exceeds 80 percent of the value of the bid price multiplied by the bid proposal quantity.
- (5) As used in this subsection, the term "bid proposal quantity" means the quantity indicated in the bid proposal less the quantities designated in the project plans as "if and where directed."

VALUE ENGINEERING: Pursuant to N.J.S.A. 40A:11-16.6, all construction contracts issued by a contracting unit when the total price of the originally awarded contract equals or exceeds \$5,000,000.00 dollars shall allow for value engineering construction change orders to be approved after the award of the contract.

For the purpose of this Act:

"Construction" shall mean the construction, reconstruction, demolition, erection, alteration, or repair of a structure or other improvement to real property, other than the construction, reconstruction, demolition, or renovation of a public building.

"Value engineering construction change order" shall mean a change order that results in cost reductions to a project or any portion of the work from the original bid specifications after a construction contract is awarded.

"Value engineering construction proposal" shall mean a cost reduction proposal based on analysis by a Contractor of the functions, systems, equipment, facilities, services, supplies, means and methods of construction, and any other item needed for the completion of the contract consistent with the required performance, quality, reliability, and safety.

Value engineering construction change orders shall be subject to the following provisions:

- 1) Value engineering construction change orders shall not be utilized to impair any of the essential functions, or characteristics of the project, or any portion of the work involved.

- 2) The Contractor shall submit a value engineering construction proposal that completely describes the changes to the original specifications or proposal, impact on other project components, advantages and disadvantages of the proposed change, cost estimates and calculations on which they are based, any impact on the contract time schedule, and any other relevant information that the ACUA may require in order to review the value engineering construction proposal. The Contractor's cost for developing the value engineering construction proposal shall not be eligible for reimbursement by the ACUA.
- 3) The Contractor shall be liable for all reasonable costs incurred by the ACUA for the technical evaluation and engineering review of a value engineering construction proposal presented by the Contractor.
- 4) The ACUA's Engineer shall prepare a written report for the governing body that shall evaluate the value engineering construction proposal, make a recommendation on whether or not it should be accepted, rejected, or modified, and state to the City and the Contractor the amount of any projected cost savings.
- 5) The proposal shall not be approved unless the Engineer reports to the governing body that the proposal appears consistent with the required performance, quality, reliability, and safety of the project and does not impair any of the essential functions, or characteristics of the project, or any portion of the work involved.
- 6) The ACUA's shall have the sole discretion to approve or disapprove a value engineering construction proposal.
- 7) The Contractor and the ACUA shall equally share in the cost savings generated on the contract as a result of an approved value engineering construction change order. Once the project is completed, the ACUA's engineer shall verify the cost savings to reflect the actual cost of the work, and such verified cost saving shall be the basis for the savings shared equally with the Contractor.

Value engineering construction change orders shall be subject to the following provisions:

- 8) The Contractor shall have no claim against the ACUA as a result of the ACUA's disapproval of a value engineering construction proposal.
- 9) The ACUA shall include in its bid specifications and contract documents procedures to regulate the value engineering construction change order process. Such procedures shall be based on procedures established by the New Jersey Department of Transportation, or any other appropriate State agency, and/or rules duly adopted by the Director of the Division of Local Government Services (NJDLGS).
- 10) This section shall not invalidate or impair rules regarding change orders adopted by the Director of the Division of Local Government Services prior to the effective date of this Act. Notwithstanding any provision of P.L. 1968, c.410 (C.52:14B-1 et seq.) to the contrary, the Director may adopt, immediately upon filing with the Office of Administrative Law, such rules and regulations as the Director deems necessary to implement the provisions of P.L. 2005, c.67 (C.40A:11-16.6) which shall be effective for a period not to exceed twelve (12) months. The regulations shall thereafter be amended, adopted or readopted in accordance with the provisions of P.L. 1968, c.410 (C.52:14B-1 et seq.). L.2005, c. 67, s. 1.

SITE CONDITIONS AND UTILITIES: It shall be the contractor's responsibility to cope with any water encountered during construction. The cost of all pumping, sheeting, well points, stone base and all else

required to handle said conditions shall be borne by the contractor. No claim for extra payment shall be made for water conditions encountered. The Contractor shall ascertain the location and/or depth of all underground and aerial utilities and he shall assume full responsibility for their protection, repair said utilities if damaged, and relocate them if and where required.

NEW JERSEY RIGHT TO KNOW: The manufacturer or supplier of chemical substances or mixtures shall label them in accordance with the N.J. Worker and Community Right to Know Law (N.J.S.A. 34:5A-1 et seq., and N.J.A.C 8:59-1.1 et seq.,). All direct use containers shall bear a label indicating the chemical name(s) and Chemical Abstracts Service number(s) of all hazardous substances in the container, and all other substances which are among the five most predominant substances in the container, or their trade secret registry number(s) pursuant to N.J.A.C. 8:59-5. "Container" means a receptacle used to hold a liquid, solid or gaseous substance such as bottles, bags, barrels, cans, cylinders, drums and cartons. (N.J.A.C. 8:59-1.3). Further, all applicable Material Safety Data Sheets (MSDS) - hazardous substance fact sheet - must be furnished. All containers which are stored at an owner's facilities by the contractor or subcontractors shall display RTK labeling. Vendors with questions concerning labeling should contact the New Jersey Department of Health and Senior Services Right to Know Program for assistance in developing proper labels. www.nj.gov/health/workplacehealthandsafety/right-to-know/

UTILIZATION OF UNION LABOR: The Owner neither requires nor prohibits the use of union labor in any part of the Work; all matters of labor relations are considered to be purely within the Contractor's discretion. No additional compensation will be paid, nor will any extension of time for the performance of the Work be granted, by reason of the use of union labor or arising from any labor relations difficulties encountered by Contractor or any subcontractor including any time or productivity alleged to be lost by any picketing, work stoppage, or other activity affecting the jobsite.

BIDDER LISTS: The Owner will not, prior to opening of bids, release the names of persons or entities who have picked up specification packages. This list will be available at any time after bids are received.

ACUA PAYMENT POLICY AND PROCEDURES: As established by Board Resolution 06-12-232, the payment cycle at the Atlantic County Utilities Authority shall be as follows:

- (1) Invoices and all other documentation required for approval of payment must be received by the Authority on or before the first Friday of a month for payment in that month's payment cycle.
- (2) Invoices received by the first Friday of any given month will be submitted to the Board of Commissioners at their regularly scheduled meeting, which occurs on the third Thursday of every month.
- (3) The approval of said payments by the Board of Commissioners is subject to a veto of the minutes by the County Executive pursuant to statute, which either occurs within ten days or is waived.
- (4) Payments will be issued by the Authority within five working days of formal notification by the County Executive that the minutes are approved or within five working days of the failure to the County Executive to act within ten days of receipt of the minutes.

FORFEITURE OF DEPOSIT IN CERTAIN CASES: According to N.J.S.A. 40A: 11-33, a deposit made by any person who makes or causes to be made a false, deceptive or fraudulent statement or answers in response to a questionnaire or in the course of hearing hereunder may be caused to be forfeited, as liquidated damages by and to the contracting unit.

PENALTIES FOR FALSE STATEMENTS: Pursuant to N.J.S.A. 40A: 11- 34, any person who makes or causes to be made a false, deceptive or fraudulent statement or answers in response to a questionnaire or in the course of hearing hereunder, shall be guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than \$100.00 nor more than \$1,000.00, and shall be permanently disqualified from bidding on all public work or contracts of the contracting unit which submitted the questionnaire; or, in the case of an individual or an officer or employee charged with the duty of responding to the questionnaire for a person, firm, copartnership, association or corporation, by such fine or by imprisonment, not exceeding 6 months, or both.

ANNUAL DISCLOSURE REQUIREMENTS OF BUSINESS ENTITIES WITH CONTRACTS AT OR ABOVE \$50,000: Any business entity making a contribution of money or any other thing of value, including an in-kind contribution, or pledge to make a contribution of any kind to a candidate for or the holder of any public office having ultimate responsibility for the awarding of public contracts, or to a political party committee, legislative leadership committee, political committee or continuing political committee, which has received in any calendar year \$50,000 or more in the aggregate through agreements or contracts with a public entity, shall file an annual disclosure statement with the New Jersey Election Law Enforcement Commission, established pursuant to section 5 of P.L.1973, c.83 (N.J.S.A. 19:44A-5), setting forth all such contributions made by the business entity during the 12 months prior to the reporting deadline.

SMALL BUSINESS CONCERNS OWNED AND CONTROLLED BY SOCIALLY AND ECONOMICALLY DISADVANTAGED INDIVIDUALS (SED): The successful bidder shall be advised that the Owner, as stipulated in N.J.A.C. 7:22-3.17(a)24 and &22-4.17(a), or 7:22-6.17(a)24, has set a goal of no less than 10% of the total amount of all contracts associated with this bid be awarded to SED's. The successful bidder must comply with all provisions of N.J.A.C. 7:22-9.1 et seq.

RETENTION OF RECORDS: The Contractor shall maintain all documentation related to products, transactions or services under this contract for a period of five years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller upon request.

EXHIBIT B

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE

N.J.S.A. 10:5-31 et seq. (P.L.1975, c.127)

N.J.A.C. 17:27-1.1 et seq.

CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer, pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. 17:27-7.2; provided, however, that the Dept. of LWD, Construction EEO Monitoring Program, may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures pre-scribed by the following provisions, A, B, and C, as long as the Dept. of LWD, Construction EEO Monitoring Program is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with standards prescribed by the Dept. of LWD, Construction EEO Monitoring Program, that its percentage of

active “card carrying” members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. 17:27-7.2. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

(A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or sub-contractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et. seq., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or sub-contractor agrees to afford equal employment opportunities minority and women workers directly, consistent with this chapter. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with affording equal employment opportunities as specified in this chapter, the contractor or subcontractor agrees to be prepared to provide such opportunities to minority and women workers directly, consistent with this chapter, by complying with the hiring or scheduling procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines that the union is not referring minority and women workers consistent with the equal employment opportunity goals set forth in this chapter.

(B) If good faith efforts to meet targeted employment goals have not or cannot be met for each construction trade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:

(1) To notify the public agency compliance officer, the Dept. of LWD, Construction EEO Monitoring Program, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;

(2) To notify any minority and women workers who have been listed with it as awaiting available vacancies;

(3) Prior to commencement of work, to request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;

(4) To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;

(5) If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and non-discrimination standards set forth in this regulation, as well as with applicable Federal and State court decisions;

(6) To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:

(i) The contractor or subcontractor shall interview the referred minority or women worker.

(ii) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience recognized by a union, apprentice program or a referral agency, provided the referral agency is acceptable to the Dept. of LWD, Construction EEO Monitoring Program. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All of the requirements, however, are limited by the provisions of (C) below.

(iii) The name of any interested women or minority individual shall be maintained on a waiting list, and shall be considered for employment as described in (i) above, whenever vacancies occur. At the request of the Dept. of LWD, Construction EEO Monitoring Program, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.

(iv) If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Dept. of LWD, Construction EEO Monitoring Program.

(7) To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Dept. of LWD, Construction EEO Monitoring Program and submitted promptly to the Dept. of LWD, Construction EEO Monitoring Program upon request.

(C) The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hall arrangement, and, where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the targeted county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to

such agreement or arrangement; provided further, however, that the contractor or subcontractor shall not be required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total workforce for the construction trade, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that, in implementing the procedures of (B) above, it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Dept. of LWD, Construction EEO Monitoring Program an initial project workforce report (Form AA-201) electronically provided to the public agency by the Dept. of LWD, Construction EEO Monitoring Program, through its web-site, for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Dept. of LWD, Construction EEO Monitoring Program, and to the public agency compliance officer.

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and/or off-the-job programs for outreach and training of minorities and women.

(D) The contractor and its subcontractors shall furnish such reports or other documents to the Dept. of LWD, Construction EEO Monitoring Program as may be requested by the Dept. of LWD, Construction EEO Monitoring Program from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be re-requested by the Dept. of LWD, Construction EEO Monitoring Program for conducting a compliance investigation pursuant to N.J.A.C. 17:27-1.1 et seq.

APPENDIX A
AMERICANS WITH DISABILITIES ACT OF 1990
Equal Opportunity for Individuals with Disability

The contractor and the Atlantic County Utilities Authority, (hereafter "owner") do hereby agree that the provisions of Title 11 of the Americans With Disabilities Act of 1990 (the "Act") (42 *U.S.C.* §§ 12101 *et seq.*), which prohibits discrimination on the basis of disability by public entities in all services, programs, and activities provided or made available by public entities, and the rules and regulations promulgated pursuant there unto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the owner pursuant to this contract, the contractor agrees that the performance shall be in strict compliance with the Act. In the event that the contractor, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the contractor shall defend the owner in any action or administrative proceeding commenced pursuant to this Act. The contractor shall indemnify, protect, and save harmless the owner, its agents, servants, and employees from and against any and all suits, claims, losses, demands, or damages, of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any and all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the owner's grievance procedure, the contractor agrees to abide by any decision of the owner which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the owner, or if the owner incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the contractor shall satisfy and discharge the same at its own expense.

The owner shall, as soon as practicable after a claim has been made against it, give written notice thereof to the contractor along with full and complete particulars of the claim, If any action or administrative proceeding is brought against the owner or any of its agents, servants, and employees, the *owner shall* expeditiously forward or have forwarded to the contractor every demand, complaint, notice, summons, pleading, or other process received by the owner or its representatives.

It is expressly agreed and understood that any approval by the owner of the services provided by the contractor pursuant to this contract will not relieve the contractor of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the owner pursuant to this paragraph.

It is further agreed and understood that the owner assumes no obligation to indemnify or save harmless the contractor, its agents, servants, employees and subcontractors for any claim which may arise out of their performance of this Agreement. Furthermore, the contractor expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the contractor's obligations assumed in this Agreement, nor shall they be construed to relieve the contractor from any liability, nor preclude the owner from taking any other actions available to it under any other provisions of the Agreement or otherwise at law.

APPENDIX B
NEW JERSEY ANTI-DISCRIMINATION PROVISIONS
N.J.S.A. 10:2-1 ET SEQ.

Pursuant to N.J.S.A. 10:2-1, if awarded a contract, the contractor agrees that: a. In the hiring of persons for the performance of work under this contract or any subcontract hereunder, or for the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under this contract, no contractor, nor any person acting on behalf of such contractor or subcontractor, shall, by reason of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex, discriminate against any person who is qualified and available to perform the work to which the employment relates; b. No contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee engaged in the performance of work under this contract or any subcontract hereunder, or engaged in the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under such contract, on account of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex; c. There may be deducted from the amount payable to the contractor by the contracting public agency, under this contract, a penalty of \$50.00 for each person for each calendar day during which such person is discriminated against or intimidated in violation of the provisions of the contract; and d. This contract may be canceled or terminated by the contracting public agency, and all money due or to become due hereunder may be forfeited, for any violation of this section of the contract occurring after notice to the contractor from the contracting public agency of any prior violation of this section of the contract. No provision in this section shall be construed to prevent a board of education from designating that a contract, subcontract or other means of procurement of goods, services, equipment or construction shall be awarded to a small business enterprise, minority business enterprise or a women's business enterprise pursuant to P.L.1985, c.490 (C.18A:18A-51 et seq.).

**ATLANTIC COUNTY UTILITIES AUTHORITY
GENERAL INSURANCE AND INDEMNITY REQUIREMENTS**

INSURANCE: (Review this section carefully with your insurance agent prior to bid or proposal submissions. See "Insurance Check List" for specific coverages applicable to this contract.

1. - General Insurance Requirements

1.1 - The Contractor shall not start Work until the Contractor has obtained at the Contractor's own expense all of the insurance as required hereunder and such insurance has been approved by the Authority; nor shall the Contractor allow any Subcontractor to start work on any subcontract until all insurance required of the Subcontractor has been so obtained and approved by the Contractor. Approval of insurance required of the Contractor and subcontractors will be granted only after submission to the Authority of original, certificates of insurance signed by authorized representatives of the insurers, policy endorsements as specified or, at the Authority's request, certified copies of the required insurance policies

1.2 - Insurance as required hereunder shall be in force throughout the term of the Contract and for two years after final acceptance of the work by the Authority in accordance with 2.1.1.iv.. Certificates of Insurance with endorsements shall be maintained with the Authority throughout the term of the Contract and for two years after final acceptance.

1.3 - The Contractor shall require all Subcontractors to maintain during the term of the Contract commercial general liability insurance, business auto liability insurance, and workers compensation and employers liability insurance to the same extent required of the Contractor in 2.1 unless any such requirement is expressly waived or amended by the Authority in writing. The Contractor shall furnish Subcontractors' certificates of insurance to the Authority immediately upon request.

1.4 - All insurance policies shall be endorsed to provide that the policy is not subject to cancellation, non-renewal or material reduction in coverage until thirty (30) days prior written notice has been given to the Authority. A copy of the endorsement shall be furnished to the Authority.

1.5 - No acceptance and/or approval of any insurance by the Authority shall be construed as relieving or excusing the Contractor or the Contractor's Surety from any liability or obligation imposed upon either or both of them by the provisions of this Contract.

1.6 If the Contractor does not meet the insurance requirements of the specifications, alternate insurance coverage, satisfactory to the Authority, may be considered. Written requests for consideration of alternate coverages must be received by the Authority at least ten working days prior to the date set for receipt of bids or proposals; if a deadline for submission of questions or interpretations is set forth in the Instructions to Bidders, requests must be received by that deadline. If the Authority denies the request for alternate coverages, the specified coverages will be required to be submitted. If the Authority permits alternate coverage, an amendment to the Insurance Requirements will be prepared and distributed as an addendum prior to the time and date set for receipt of bids or proposals.

1.7 - All required insurance coverages must be underwritten by insurers allowed to do business in the State of New Jersey and acceptable to the Authority. The insurers must also have a

ATLANTIC COUNTY UTILITIES AUTHORITY
GENERAL INSURANCE AND INDEMNITY REQUIREMENTS

policyholders' rating of "A-" or better, and a financial size of "Class VII" or better in the latest evaluation by A. M. Best Company, unless the Authority grants specific approval for an exception as described above.

1.8 - Any insurance deductibles or retentions in excess of \$10,000 shall be disclosed by the Contractor, and are subject to the Authority's written approval. Any deductible or retention amounts elected by the Contractor or imposed by the Contractor's insurer(s) shall be the sole responsibility of the Contractor.

1.9 – The Contractor shall provide insurance as specified in the “Insurance Coverage Check List” attached to this section.

1.10 - If the Authority is damaged by the failure or neglect of the Contractor to purchase and maintain insurance as described and required herein, without so notifying the Authority, then the Contractor shall bear all reasonable costs properly attributable thereto.

1.11 - The Contractor covenants to save, defend, keep harmless and indemnify the Authority and all of its elected or appointed officials, agents and employees (collectively the "Authority") from and against any and all claims, loss, damage, injury, cost (including court costs and attorney's fees), charge, liability or exposure, however caused, resulting from or arising out of or in any way connected with the Contractor's performance or non-performance of the terms of the Contract Documents or its obligations under the Contract. This indemnification shall continue in full force and effect until the Contractor completes all of the work required under the Contract, except that indemnification shall continue for all claims involving completed operations after completion of the work by the Contractor for which the Authority gives notice to the Contractor after the completion of the work.

1.12 The Contractor shall be responsible for the work performed under the Contract Documents and every part thereof, and for all materials, tools, equipment, appliances, and property of any and all description used in connection with the work, subject to Builder's Risk or Installation Floater insurance requirements, if any, contained in these documents. The Contractor assumes all risks for direct and indirect damage or injury to the property or persons used or employed on or in connection with the work contracted for, and of all damage or injury to any person or property wherever located, resulting from any action, omission, commission or operation under the Contract, or in connection in any way whatsoever with the contracted work, until final completion of the work by the Contractor.

1.13 - Insurance coverage required in the Contract Documents shall be in force throughout the contract term. Should the Contractor fail to provide acceptable evidence of current insurance within seven (7) days of written request from the Authority at any time during the contract term, the Authority shall have the absolute right to terminate the Contract without any further obligation to the Contractor, and the Contractor shall be liable to the Authority for the entire additional cost of procuring performance and the cost of performing the uncompleted portion of the Contract at time of termination.

1.14 - Nothing contained in the Contract Documents shall be construed as creating any contractual relationship between any subcontractor and the Authority. The Contractor shall be as fully responsible to the Authority for the acts and omissions of the subcontractors and of persons employed by them as it is for acts and omissions of persons directly employed by it.

ATLANTIC COUNTY UTILITIES AUTHORITY
GENERAL INSURANCE AND INDEMNITY REQUIREMENTS

1.15 All precautions shall be exercised by the contractor at all times for the protection of persons, (including employees) and property., All existing structures, utilities, roads, services, trees, and shrubbery shall be protected against damage or interruption of service at all times by the Contractor and its subcontractors during the term of the contract, and the Contractor shall be held responsible for any damage to property and utility service interruption expenses occurring by reason of its operation on the Authority's property.

2. - Contractor's Insurance

2.1 - The Contractor shall purchase and maintain the following insurance coverages which shall be written for not less than the limits specified in the "Insurance Check List" or required by law, whichever is greater.

2.1.1 - Commercial general liability insurance or its equivalent for bodily injury, personal injury and property damage including loss of use.

This insurance shall include coverage for all of the following:

- i. General aggregate limit applying on a per project basis;
- ii. Liability arising from premises and operations;
- iii. Liability arising from the actions of independent contractors;
- iv. Liability arising from products and completed operations with such coverage to be maintained for two years after completion of the Work;
- v. Contractual liability including protection for the Contractor from bodily injury and property damage claims arising out of liability assumed under this Contract; and
- vi. Liability arising from the explosion, collapse, or underground (XCU) hazards.

2.1.2 - Business auto liability insurance or its equivalent including coverage for the following:

- i. Liability arising out of the ownership, maintenance or use of any auto (or hired and non-owned autos only if no owned autos);
- ii. Automobile contractual liability;
- iii. Motor Carrier Act endorsement, if applicable.

2.1.3 - Workers compensation insurance with statutory benefits as required by any state or Federal law, or as required by union labor agreements, including standard "other states" coverage; employers liability insurance.

2.1.4 - Umbrella excess liability or excess liability insurance or its equivalent including all of the following coverages as underlying insurance:

**ATLANTIC COUNTY UTILITIES AUTHORITY
GENERAL INSURANCE AND INDEMNITY REQUIREMENTS**

- i. Commercial general liability;
- ii. Business auto liability; and
- iii. Employers liability.

2.1.5 – By endorsement, the Authority and Authority’s elected and appointed officials, agents and employees shall be named as additional insureds on the Contractor’s commercial general liability insurance, and umbrella excess or excess liability insurance if required, with respect to liability arising out of the Contractor’s products, installation, and/or services provided under this Contract.

2.1.6 - Insurance provided to the Authority and Authority’s elected and appointed officials, agents and employees under the Contractor’s liability insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of insurance. (Any cross suits or cross liability exclusion shall be deleted from Contractor’s liability insurance policies required herein.)

2.1.7 - Insurance provided to the Authority and Authority’s elected and appointed officials, agents and employees as specified herein shall be primary, and any other insurance, self-insurance, coverage or indemnity available to the Authority and its elected and appointed officials, agents and employees shall be excess of and non-contributory with insurance as specified herein.

2.2 - If any liability insurance purchased by the Contractor has been issued on a "claims made" basis, the Contractor must comply with the following additional conditions:

2.2.1 - The Contractor shall agree to provide certificates of insurance evidencing the above coverages for a period of two years after final payment for the Contract. Such certificates shall evidence a retroactive date no later than the beginning of the Work under this Contract; **or**

2.2.2 - The Contractor shall purchase an extended (minimum two years) reporting period endorsement for each such "claims made" policy in force as of the date of final acceptance and evidence the purchase of this extended reporting period endorsement by means of a certificate of insurance or a copy of the endorsement itself. Such certificate or copy of the endorsement shall evidence a retroactive date no later than the beginning of the Work under this Contract.

**ATLANTIC COUNTY UTILITIES AUTHORITY
GENERAL INSURANCE AND INDEMNITY REQUIREMENTS**

INSURANCE COVERAGE CHECK LIST

REQUIRED FOR ALL BIDS:

1. Thirty (30) Days Cancellation, non-renewal, material change or coverage reduction endorsement required.
2. Best's Rating for all carriers: "A-" VII or better, or its equivalent
3. Certificate must state bid number and bid title
4. ACUA and its officials, agents and employees named as additional insureds on other than W/C and auto. This coverage is primary to all other insurance and/or self-insurance available to ACUA.
5. Workers' Compensation & Employers' Liability: New Jersey statutory limits, employers' liability coverage minimum \$100,000 accident, \$100,000 disease, \$500,000 policy limit disease;
6. USL&H Employment: Statutory - if applicable to the project; and
7. CGL general aggregate is to apply per project.
Items marked "X" are required to be provided if award is made to your firm.

**ATLANTIC COUNTY UTILITIES AUTHORITY
GENERAL INSURANCE AND INDEMNITY REQUIREMENTS**

INSURANCE COVERAGE CHECK LIST (Continued)

<u>Coverage Required</u>	<u>Limits (Figures Denote Minimums)</u>
<u> X </u> 1. Workers' Compensation	Statutory limits of the State of New Jersey
<u> X </u> 2. Employers Liability	\$100,000 accident; \$100,000 disease each employee \$500,000 policy limit
<u> </u> 3. USL&H Endorsement	Statutory
<u> X </u> 4. Commercial General Liability	Items Nos: 4 ,5,6,8 &10 require: <u>\$1,000,000.00</u> combined single limit for bodily injury and property damage each occurrence with <u>\$1,000,000.00</u> general aggregate per project
<u> </u> 5. Premises/Operations	
<u> </u> 6. Independent Contractors	
<u> </u> 7. Products/Completed Operations	<u>Two (2) year(s)</u> \$1,000,000 aggregate
<u> </u> 8. Contractual Liability	
<u> </u> 9. Personal Injury Liability	\$1,000,000 each offense
<u> </u> 10. XCU Coverage	
<u> X </u> 11. Automobile Liability	\$1,000,000 Bodily injury and Property Damage each accident (Items 11 & 12)
<u> X </u> 12. Owned, Hired & Non-owned	
<u> </u> 13. Motor Carrier Act End.	
<u> X </u> 14. Umbrella Liability	\$1,000,000 BI & PD & PERS INJURY unless other limits stated below
	\$_____ BI & PD, & Pers Inj
<u> </u> 15. Other Insurance Required:	
_____	\$ _____
_____	\$ _____

The Authority and its officials, agents and employees are to be named as additional insureds on Commercial General Liability, and Umbrella if applicable. This coverage is primary to all other coverage the Authority may possess.

INFORMATION FOR BIDDERS
(Continued)
INSURANCE AGENT'S STATEMENT

I CERTIFY that I have reviewed the insurance coverage requirements with the bidder named below and that the bidder can comply with all of those insurance requirements.

Name(s) and address(es) of bonding company(ies) or bank(s) submitting letter of credit, if applicable.

The policy(ies) carry the following deductibles:

Liability policies are (indicate):

Occurrence []
Claims Made []

NAME OF INSURANCE AGENT

SIGNATURE

Date _____, 2004

BIDDER'S STATEMENT

I HEREBY CERTIFY the Insurance Coverage Requirements of these specifications and agree to comply in full if awarded this contract.

NAME OF BIDDER

SIGNATURE

Date _____, 2004

INFORMATION FOR BIDDERS

(Continued)

DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

PART 1: CERTIFICATION BIDDERS MUST COMPLETE PART 1 BY CHECKING EITHER BOX

FAILURE TO CHECK ONE OF THE BOXES WILL RENDER THE PROPOSAL NON-RESPONSIVE

Pursuant to Public Law 2012, c.25, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete the certification below to attest, under penalty of perjury, that NEITHER the person or entity, nor any of its parents, subsidiaries, or affiliates, is identified on the Department of Treasury Chapter 25 list as a person or entity engaging in investment activities in Iran. The Chapter 25 list is found on the Division's website at <http://www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf>. Bidders **must** review this list prior to completing the below certification. **Failure to complete the certification will render a bidder's proposal non-responsive.** If the New Jersey Director of the Division of Purchase and Property finds a person or entity to be in violation of law, he/she shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking suspension of the party.

PLEASE CHECK THE APPROPRIATE BOX:

I certify, pursuant to Public Law 2012, c.25, that neither the bidder listed above nor any of the bidder's parents, subsidiaries, or affiliates listed on the N.J. Department of the Treasury's list of entities determined to be engaged in prohibited activities in Iran pursuant to P.L. 2012, c.25 ("Chapter 25 List"). I further certify that I am the person listed above, or I am an officer or representative of the entity listed above and am authorized to make this certification on its behalf. I will skip Part 2 and sign and complete the Certification below.

OR

I am unable to certify as above because the bidder and/or one of its parents, subsidiaries, or affiliates is listed on the Department's Chapter 25 List. I will provide a detailed, accurate and precise description of the activities in Part 2 below and sign and complete the Certification below. Failure to provide such will result in the proposal being rendered as non-responsive and appropriate penalties, fines and/or sanctions will be assessed as provided by law.

PART 2 – ADDITIONAL INFORMATION:

PLEASE PROVIDE FURTHER INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN. You must provide a detailed, accurate and precise description of the activities of the bidding person/entity, or one of its parents, subsidiaries or affiliates, engaging in the investment activities in Iran outlined above by completing the boxes below.

PART 3 – CERTIFICATION

I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I attest that I am authorized to execute this certification on behalf of the above-referenced person or entity. I acknowledge that the State of New Jersey and the Owner of the project are relying on the information contained herein and thereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with the State of New Jersey and the Owner to notify the State of New Jersey and the Owner in writing of any changes to the answers of information contained herein. I acknowledge that I am aware of that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with the State of New Jersey and/or the Owner and that the State and/or the Owner at its option may declare any contract(s) resulting from this certification void and unenforceable.

Bidder Name:			
Full Name (Print):		Title:	
Signature:		Date:	

BIDDER'S STATEMENT OF QUALIFICATIONS

The bidder is required to provide evidence to the Owner that he is qualified to perform the contract work. This evidence shall include, but shall not be limited to a statement of work of a similar nature to the contract work that the bidder has performed in the last five years, and such other evidence as the bidder shall deem relevant to his qualifications and experience. The Owner reserves the right, in its sole judgment, to request such other and further information and undertake such investigation as it shall consider necessary to determine the bidder's qualifications and responsibility. By the act of bidding the bidder consents to such investigation.

BIDDER'S STATEMENT (Use additional sheets if necessary.)

Are additional sheets attached? Yes No

STATEMENT MUST BE CERTIFIED BELOW:

I hereby certify that the foregoing statements are true and recognize that if any statement herein is willfully false I am subject to punishment.

Dated:

STATEMENT OF OWNERSHIP DISCLOSURE

N.J.S.A. 52:25-24.2 (P.L. 1977, c.33, as amended by P.L. 2016, c.43)

This statement shall be completed, certified to, and included with all bid and proposal submissions. Failure to submit the required information is cause for automatic rejection of the bid or proposal.

Name of Organization: _____

Organization Address: _____

Part I Check the box that represents the type of business organization:

- Sole Proprietorship (skip Parts II and III, execute certification in Part IV)
- Non-Profit Corporation (skip Parts II and III, execute certification in Part IV)
- For-Profit Corporation (any type) Limited Liability Company (LLC)
- Partnership Limited Partnership Limited Liability Partnership (LLP)
- Other (be specific): _____

Part II

- The list below contains the names and addresses of all stockholders in the corporation who own 10 percent or more of its stock, of any class, or of all individual partners in the partnership who own a 10 percent or greater interest therein, or of all members in the limited liability company who own a 10 percent or greater interest therein, as the case may be. **(COMPLETE THE LIST BELOW IN THIS SECTION)**
- OR**
- No one stockholder in the corporation owns 10 percent or more of its stock, of any class, or no individual partner in the partnership owns a 10 percent or greater interest therein, or no member in the limited liability company owns a 10 percent or greater interest therein, as the case may be. **(SKIP TO PART IV)**

(Please attach additional sheets if more space is needed):

Name of Individual or Business Entity	Home Address (for Individuals) or Business Address

Part III DISCLOSURE OF 10% OR GREATER OWNERSHIP IN THE STOCKHOLDERS, PARTNERS OR LLC MEMBERS LISTED IN PART II

If a bidder has a direct or indirect parent entity which is publicly traded, and any person holds a 10 percent or greater beneficial interest in the publicly traded parent entity as of the last annual federal Security and Exchange Commission (SEC) or foreign equivalent filing, ownership disclosure can be met by providing links to the website(s) containing the last annual filing(s) with the federal Securities and Exchange Commission (or foreign equivalent) that contain the name and address of each person holding a 10% or greater beneficial interest in the publicly traded parent entity, along with the relevant page numbers of the filing(s) that contain the information on each such person. **Attach additional sheets if more space is needed.**

Website (URL) containing the last annual SEC (or foreign equivalent) filing	Page #'s

Please list the names and addresses of each stockholder, partner or member owning a 10 percent or greater interest in any corresponding corporation, partnership and/or limited liability company (LLC) listed in Part II other than for any publicly traded parent entities referenced above. The disclosure shall be continued until names and addresses of every noncorporate stockholder, and individual partner, and member exceeding the 10 percent ownership criteria established pursuant to N.J.S.A. 52:25-24.2 has been listed. **Attach additional sheets if more space is needed.**

Stockholder/Partner/Member and Corresponding Entity Listed in Part II	Home Address (for Individuals) or Business Address

Part IV CERTIFICATION

I, being duly sworn upon my oath, hereby represent that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I acknowledge: that I am authorized to execute this certification on behalf of the bidder/proposer; that the **Atlantic County Utilities Authority** is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the completion of any contracts with **ACUA** to notify the **ACUA** in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the, permitting the **ACUA** to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):		Title:	
Signature:		Date:	

ATLANTIC COUNTY UTILITIES AUTHORITY

BID GUARANTEE

NOTE: THIS FORM IS TO BE EXECUTED ONLY IF THE BIDDER IS PROVIDING A CERTIFIED OR CASHIER'S CHECK IN LIEU OF A BID BOND. IF THIS IS THE CASE AND PERFORMANCE AND/OR PAYMENT BONDS ARE REQUIRED BY THE PROJECT SPECIFICATIONS, THE PRESCRIBED CONSENT OF SURETY FORM MUST ALSO BE EXECUTED.

IF A SURETY BOND IS NOT PROVIDED, COMPLETE AND SIGN THIS GUARANTEE AND ATTACH CHECK FOR 10% OF THE AMOUNT BID, NOT TO EXCEED \$20,000.00.

Pursuant to N.J.S.A. 40A: 11-21, I hereby certify, on behalf of the person or entity whose name appears below as the bidder herein, that if the contract is awarded to said person or entity it will enter into a contract therefor and will furnish any performance bond or other security required, if any, as a guarantee or indemnification of the Atlantic County Utilities Authority. A cashier's or certified check in the amount of 10% (Ten Percent) of the amount bid is attached hereto. I recognize, on behalf of the bidder that if the bidder fails or refuses to enter into the contract and supply the required performance bond or other security said check will be forfeited to the Atlantic County Utilities Authority.

SIGNATURE OF BIDDER:

DATE: _____

NAME AND TITLE (PRINT OR TYPE):

BUSINESS ADDRESS:

ATTACH CASHIER'S OR CERTIFIED CHECK, PAYABLE TO "ATLANTIC COUNTY UTILITIES AUTHORITY" HERE.

ATLANTIC COUNTY UTILITIES AUTHORITY

A performance bond will be required from the successful contractor on this project, and consequently, all bidders shall submit with their bid, a consent of surety in substantially the following form:

CONSENT OF SURETY

To: Atlantic County Utilities Authority

Re: _____
(Principal (bidder))

(Project Description)

This is to certify that the _____
(Surety Company)

will provide to Atlantic County Utilities Authority a performance bond in the full amount of the awarded contract in the event that said contractor is awarded a contract for the above project.

(Principal)

(Authorized Agent of Surety Company)

(Date)

CONSENT OF SURETY MUST BE SIGNED BY AN AUTHORIZED AGENT OR REPRESENTATIVE OF A SURETY COMPANY AND NOT BY THE INDIVIDUAL OR COMPANY REPRESENTATIVE SUBMITTING THE BID.

ATLANTIC COUNTY UTILITIES AUTHORITY

BID BOND, CONSENT OF SURETY AND CONSENT OF SURETY ON BEHALF OF PRINCIPAL AND SUBCONTRACTORS

Information for Bidders and Sureties:

1. This form of bond must be used by all bidders where bid and/or performance bonding is required by the Specifications or by statute.

The purpose of this combined bid bond-consent of surety form is to provide a standard bid bond and at the same time to avoid omission of required consents of surety.

2. The obligations of the surety under the "Consent of Surety - As to Principal" made a part of this Bond shall be legally effective if, and only if, the Specifications require performance and/or payment security to be provided. If this security is not required by the Specifications, by execution of this document the surety does not obligate itself to provide it. In the event that the contract to be awarded is governed by the provisions of N.J.S.A. 40A:11-16 with respect to listing of subcontractors, the "Consent of Surety - As to Principal and Subcontractors" shall also be effective whether or not the Specifications explicitly require performance security on behalf of subcontractors.

3. If a bidder chooses to provide a certified check in lieu of bid bond, the bidder is required to execute the Bid Guarantee also included in this packet.

4. If the bidder determines to provide a check in lieu of bid bond and the Specifications require performance, payment, or other contract bonding of any kind, the Consents of Surety must nevertheless be executed. This form, to the extent it is a bid bond but only to that extent, shall be superseded by the submission of a check and Bid Guarantee.

WHEREAS, the Principal,

(Name of bidder)

has submitted a bid on a public contract with the Atlantic County Utilities Authority as Owner, which contract is identified as

Atlantic County Utilities Authority Bid No. _____

Subject matter of bid:

and the Surety,

(insert name of surety)

desires along with the Principal to provide certain bonds and certifications to the Owner as required by law and by the Specifications in the above Bid;

THEREFORE, the Principal and the Surety, intending to be legally bound, hereby provide the following to the Owner:

BID BOND (N.J.S.A. 40A:11-21)

THIS BOND, made this _____ day of _____ 20____,

WITNESSETH:

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned Principal and Surety are held and firmly bound unto the Owner, in the penal sum of

\$ _____ for the payment of which, well and truly to be
(insert bond amount, which must be
10% of bid not to exceed \$20,000.00)

made, we hereby jointly and severally bind ourselves, our heirs, administrators, executors, successors and assigns;

WHEREAS, the Principal has submitted a bid as aforesaid to the Owner for the public contract identified hereinabove;

THEREFORE,

a) if the bid of the Principal referenced above shall be rejected; or

b) if said bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto, properly completed in accordance with said bid, and shall furnish all required performance and/or payment bonds, and shall otherwise fulfill the obligation to enter into a contract created by the acceptance of said bid, then this obligation shall be void. Otherwise, this obligation shall remain in full force and effect, it being understood that the total obligation of the Surety under this Bid Bond shall under no circumstances exceed the penal sum of this Bond.

The Surety, for value received, hereby stipulates and agrees that its obligations hereunder shall be in no way impaired or affected by any extension of time for acceptance of said bid and the Surety hereby waives notice of any such extension.

CONSENT OF SURETY - AS TO PRINCIPAL (N.J.S.A. 40A:11-22)

The Surety by its signature hereupon certifies to the Owner that in the event that the contract named in the preceding Bid Bond is awarded to the Principal named herein, it will become surety for all performance, payment, and other bonds required by the Specifications, in the full amount required by the Specifications. In the event that the contract shall be modified by duly authorized change order, the undertakings of the Surety with respect to bonding shall extend to the amount of any such change order(s) as well.

**CONSENT OF SURETY - AS TO PRINCIPAL AND SUBCONTRACTORS
(N.J.S.A. 40A:11-16)**

In addition to the foregoing Consent of Surety As to Principal, the Surety by its signature hereupon certifies to the Atlantic County Utilities Authority as Owner that the performance security which it has consented to provide hereunder on behalf of the Principal shall be provided on behalf of the Principal and all subcontractors, in accordance with N.J.S.A. 40A:11-16, in an amount sufficient in the aggregate (including any evidence of performance security provided by subcontractors separately) to provide to the Owner evidence of performance security on behalf of the Principal and any or all subcontractors, in an amount equaling but in no event exceeding the total amount bid.

**WARRANTY AS TO AUTHORIZATION TO DO BUSINESS
IN THE STATE OF NEW JERSEY AND
"CIRCULAR 570" COMPLIANCE;
COMPLIANCE WITH N.J.S.A. 40A:11-22**

The Principal and the Surety, by their signatures on this document, warrant and represent to the Owner as follows:

- a. that the Surety is licensed to do business in the State of New Jersey as of the date of signature and that the Surety has not been declared insolvent or bankrupt, nor has it filed or has it had filed against it proceedings in the State of New Jersey or any other State for dissolution or revocation of its authority to do business.
- b. that as of the time of the execution of this Consent of Surety, it is listed in a document known as "Circular 570," "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies," and that it will immediately notify both the Principal and the Owner in the event that there is any change in this status; and
- c. that it is familiar with and has reviewed the requirements of P.L. 1995, c. 384 with respect to qualifications of sureties and completion of the required Surety Disclosure Statement and Certification; that it meets all applicable requirements and qualifications of said statute; and
- d. that it will, if the above-named Principal is awarded a contract hereunder, fully and timely execute the required Surety Disclosure Statement and Certification as to all performance and payment security.

IN WITNESS WHEREOF, the Principal and the Surety have set their hands and seals to this instrument the day and year first above written. By their signatures hereon, the individual signatories warrant they have sufficient authority to bind their principals as all representations and warranties contained herein, to this Bid Bond, and to the extent applicable under the Specifications, to the Consents of Surety, set forth above.

AFFIX CORPORATE SEALS IF APPLICABLE:

PRINCIPAL:

Dated:

_____ (L.S.)

SURETY:

Dated:

_____ (L.S.)

ATTACH POWER OF ATTORNEY

ACKNOWLEDGEMENT OF ADDENDA

The Respondent acknowledges receipt of the hereinafter enumerated Addenda which have been issued during period of bidding and agrees that said Addenda shall become a part of this contract. The Respondent shall list below the numbers and issuing dates of the Addenda.

ADDENDA NO.

ISSUING DATES

No Addenda Received

Name of Company: _____

City, State, Zip Code: _____

Name of Authorized Representative: _____

Signature: _____

Date: _____

PROPOSAL AND CERTIFICATION FORM
BID # 2022-SW-07
REBID GEOTHERMAL WELLFIELD REPLACEMENT

1. The undersigned Bidder states that it has carefully examined the Contract Documents in this matter, and the site of the work and will provide all necessary labor, materials, machinery, tools, equipment, appurtenances, and services required to construct and complete the work in accordance with the Contract Documents and the requirements of the Owner.
2. The Work consists of the installation of a new geothermal wellfield at the Administration Building at the ACUA Hanemann Environmental Park in Egg Harbor Township, NJ. The work includes, but is not limited to the installation of the new wellfield, circulating piping and connection into the existing mechanical system inside the building. All work to be performed according to the plans and specifications. All work is to be performed as specified and shown in the Contract Documents.
3. The bidder hereby agrees to commence the Work at the time specified in the Notice to Proceed and shall complete the Work within **one hundred fifty (150)** calendar days. The Bidder further agrees to pay liquidated damages, under the terms set forth in the Contract Documents, for each calendar day of delay until all work is satisfactorily completed and accepted.
4. The undersigned bidder hereby proposes to perform all work called for in the Drawings and Specifications, and to complete all work based on its bid as stated below. These figures shall be used to determine the lowest responsible bidder:
5. Contractor shall provide an allowance for Fifty (50) lineal feet of six-inch (6”) diameter steel casing per bore installed. This allowance shall be included in the Total Lump Sum Cost. If not utilized, the Contractor shall credit the Owner on a per lineal foot basis.

1,400 lineal feet of Six (6) inch steel casing installed @ _____ per lineal foot.

TOTAL LUMP SUM COST FOR THE PURPOSE OF EVALUATION OF THE LOWEST RESPONSIBLE BIDDER:

\$ _____
(Set forth full price in dollars)

(Set forth full price in words)

CONTINUED ON NEXT PAGE

PROPOSAL AND CERTIFICATION FORM
BID # 2022-SW-07
REBID GEOTHERMAL WELLFIELD REPLACEMENT

5. In the event of any discrepancy between the amount written in words and the amount written in figures, the amount written in words shall govern.
6. The Bidder agrees to execute and deliver an agreement in the prescribed form and furnish the required bond(s) within ten (10) days after the Agreement is presented to him for signature.
7. Evaluation of Bids: The lowest qualified bidder will be determined on the basis of the total lump sum bid set forth above.
8. The names and addresses of **named** subcontractors to be used on this project for the following work are as follows (**New Jersey Business Registration Certificate** and **Public Works Registration Certificate** to be submitted for each with bid package):

NAMED SUBCONTRACTORS:

STRUCTURAL STEEL: _____

ELECTRICAL: _____

MECHANICAL: _____

PLUMBING: _____

CONTINUED ON NEXT PAGE

PROPOSAL AND CERTIFICATION FORM
BID # 2022-SW-07
REBID GEOTHERMAL WELLFIELD REPLACEMENT

CERTIFICATION

1. I hereby state that the goods or services offered by this bid shall be provided exactly as set forth in the specifications, without exception of any kind, unless said exception is specifically stated in writing as a part of this bid. With respect to any such exception, I recognize that the Authority reserves the right to reject any bid which, by reason of exceptions taken, is in the Authority's judgment nonconforming to the specifications.

2. I hereby certify that I have read the Proposal submitted herewith and that I am authorized to make this proposal on behalf of the business entity whose name appears in it. I further certify that all items listed and all computations are accurate and have been verified.

3. The required bid bond has been executed in favor of the Atlantic County Utilities Authority. I acknowledge, on behalf of the business entity submitting this proposal, that should the proposer fail to enter into a contract after award of same the bid bond or check submitted herewith shall be forfeited. I further state that I am authorized to execute this Proposal on behalf of my principal.

I hereby certify that the foregoing statements made by me are true and recognize that if any statement made herein is willfully false I am subject to punishment.

SIGNATURE OF BIDDER: _____ DATE: _____

NAME AND TITLE (PRINT OR TYPE): _____

BUSINESS NAME: _____

ADDRESS: _____

PHONE: _____

EMAIL: _____

Certification of Non-Debarment for Federal Government Contracts
N.J.S.A. 52:32-44.1 (P.L. 2019, c.406)

This certification shall be completed, certified to, and submitted to the contracting unit prior to contract award, except for emergency contracts where submission is required prior to payment.

Part I: Vendor Information	
Individual or Organization Name:	
Address of Individual or Organization:	
DUNS Code: (if applicable)	
CAGE Code: (if applicable)	
Check the box that represents the type of business organization:	

- Sole Proprietorship (Skip Parts III & IV) Non-Profit Corporation (Skip Parts III & IV)
 For-Profit Corporation (Any type) Limited Liability Company (LLC) Partnership
 Limited Partnership (LP) Limited Liability Partnership (LLP)
 Other (be specific): _____

Part II – Certification of Non-Debarment: Individual or Organization			
I hereby certify that the individual or organization listed above in Part I is not debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the Atlantic County Utilities Authority (“ACUA”) is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award by the ACUA to notify the ACUA in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the ACUA, permitting the ACUA to declare any contract(s) resulting from this certification void and unenforceable.			
Full Name (Print):		Title:	
Signature:		Dated:	

CONTINUED ON NEXT PAGE

**Part III – Certification of Non-Debarment: Individual or Entity Owning Greater than Fifty (50%) Percent of Organization
(Continued)**

Section A (Check the Box that applies)

Below is the name and address of the stockholder in the corporation who owns more than fifty (50%) percent of its voting stock, or of the partner in the partnership who owns more than fifty (50%) percent interest therein, or of the member of the limited liability company owning more than fifty (50%) percent interest therein, as the case may be.

Name of Individual or Organization

**Home Address (for Individual) or
Business Address**

Or

No one stockholder in the corporation owns more than fifty (50%) percent of its voting stock, or no partner in the partnership owns more than fifty (50%) percent interest therein, or no member in the limited liability company owns more than fifty (50%) percent interest therein, as the case may be.

Section B (Skip if no Business entity is listed in Section A above)

Below is the name and address of the stockholder in the corporation who owns more than fifty (50%) percent of the voting stock of the organization's parent entity, or of the partner in the partnership who owns more than fifty (50%) percent interest in the organization's parent entity, or of the member of the limited liability company owning more than fifty (50%) percent interest in organization's parent entity, as the case may be.

**Stockholder/Partner/Member Owning
Greater than fifty (50%) Percent of
Parent Entity**

**Home Address (for Individual) or Business
Address**

Or

No one stockholder in the parent entity corporation owns more than fifty (50%) percent of its voting stock, no partner in the parent entity partnership owns more than fifty (50%) percent interest therein, or no member in the parent entity limited liability company owns more than fifty (50%) percent interest therein, as the case may be.

Section C – Part III Certification

I hereby certify that no individual or organization that is debarred by the federal government from contracting with a federal agency owns greater than fifty (50%) percent of the Organization listed above in Part I or, if applicable, owns greater than fifty (50%) percent of a parent entity of _____. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the ACUA is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award shall be required to notify the ACUA in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the ACUA, permitting the ACUA to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):

Title:

Signature:

Dated:

CONTINUED ON NEXT PAGE

Part IV – Certification of Non-Debarment: Contractor – Controlled Entities (Continued)

Section A

Below is the name and address of the corporation(s) in which the Organization listed in Part I owns more than fifty (50%) percent of voting stock, or of the partnership(s) in which the Organization listed in Part IA owns more than fifty (50%) percent interest therein, or of the limited liability company or companies in which the Organization listed above in Part I owns more than fifty (50%) percent interest therein, as the case may be.

Name of Business Entity

Business Address

Add additional sheets if necessary

Or

The Organization listed above in Part I does not own greater than fifty (50%) percent of the voting stock in any corporation and does not own greater than fifty (50%) percent interest in any partnership or any limited liability company.

Section B (Skip if no business entities are listed in Section A of Part IV)

Below are the names and addresses of any entities in which an entity listed in Part IIIA owns greater than fifty (50%) percent of the voting stock (corporation) or owns greater than fifty (50%) percent interest (partnership or limited liability company).

Name of Business Entity Controlled by Entity Listed in Section A of Part IV

Business Address

Add additional Sheets if necessary

Or

No entity listed in Part IIIA owns greater than fifty (50%) percent of the voting stock in any corporation or owns greater than fifty (50%) percent interest in any partnership or limited liability company.

Section C – Part IV Certification

I hereby certify that the Organization listed above in Part I does not own greater than fifty (50%) percent of any entity that that is debarred by the federal government from contracting with a federal agency and, if applicable, does not own greater than fifty (50%) percent of any entity that in turns owns greater than fifty (50%) percent of any entity debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the ACUA is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award by the ACUA to notify the ACUA in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the ACUA, permitting the ACUA to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):

Title:

Signature:

Dated:

ATLANTIC COUNTY UTILITIES AUTHORITY
BID DOCUMENT CHECKLIST

PLEASE VERIFY THAT THE LISTED ITEMS ARE SUPPLIED AND HAVE BEEN FULLY AND PROPERLY EXECUTED AND, ON MAKING THAT VERIFICATION, CHECK OFF EACH ITEM:

- 1. PROPOSAL NAMED SUBCONTRACTORS AND CERTIFICATION FORM (**SIGNED**) _____
 (ALL ARITHMATIC CHECKED)
- 2. BIDDER’S STATEMENT OF QUALIFICATIONS FORM (**SIGNED**) _____
- 3. STATEMENT OF OWNERSHIP DISCLOSURE FORM (**SIGNED**) _____
- 4. CERTIFICATION OF NON-DEBARMENT FOR FEDERAL CONTRACTS (**SIGNED**) _____
- 5. BID BOND/CONSENT OF SURETY ON REQUIRED ACUA FORM
 (**FULLY EXECUTED** WITH POWER OF ATTORNEY) _____
- 6. CHECK, IF SUPPLIED IN LIEU OF SURETY BID BOND
 (CERTIFIED OR CASHIER'S CHECK) _____
- 7. IF CHECK IS SUPPLIED, BID GUARANTEE & CONSENT OF SURETY (**SIGNED**) _____
- 8. RECEIPT OF ADDENDA FORM (**SIGNED**) _____
- 9. BID DOCUMENT CHECKLIST (**SIGNED**) _____

THE FOLLOWING DOCUMENTS ARE DUE PRIOR TO THE CONTRACT AWARD. BIDDER’S ARE STRONGLY ENCOURAGED TO PROVIDE WITH THEIR BID DOCUMENT:

- 1. NEW JERSEY BUSINESS REGISTRATION CERTIFICATE
 (INCLUDING FOR ALL LISTED SUBCONTRACTORS) _____
- 2. PUBLIC WORKS REGISTRATION CERTIFICATE
 (INCLUDING FOR ALL LISTED SUBCONTRACTORS) _____
- 3. EQUAL EMPLOYMENT OPPORTUNITY/AFFIRMATIVE ACTION EVIDENCE _____
- 4. INSURANCE DOCUMENT CHECKLIST _____
- 5. DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN FORM (**SIGNED**) _____

Full Name (Print):		Title:	
Signature:		Date:	

SPECIMEN - DO NOT EXECUTE

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 20____ between the ATLANTIC COUNTY UTILITIES AUTHORITY, a body corporate and politic with principal offices located at 6700 Delilah Road, Egg Harbor Township, New Jersey 08234 (hereafter, ACUA), and

(hereafter, Contractor)

WITNESSETH:

1. Contractor agrees to perform all work set forth in the Contract Documents with respect to construction of **REBID GEOTHERMAL WELLFIELD REPLACEMENT**, Bid No. **2022-SW-07** in accordance with the Specifications, its Proposal, the Notice to Bidders, Instructions to Bidders, and the General and Supplemental Conditions upon which Contractor submitted a bid and was awarded a contract for the aforementioned goods and services, all of which documents are incorporated herein by reference as though set forth at length. If the term "contract documents" is defined in the General Conditions, the Contractor shall perform its work in strict accordance with all requirements of the Contract Documents as said term is used therein.

2. Incorporated by reference herein is the performance security and proof of insurance coverage of Contractor as and if called for in the Specifications, Instructions to Bidders, and General and Supplemental Conditions, as may be applicable. Contractor, by its signature on this Agreement, specifically warrants that said security and insurance coverages shall remain in force throughout the term of this Agreement.

3. Contractor further specifically agrees, as and if called for in the Specifications, Instructions to Bidders, and General and Supplemental Conditions, as may be applicable, to extend any and all required warranties and guarantees against defects in materials and workmanship to ACUA as set forth therein.

4. This Agreement, with the exception of any and all warranties hereunder, shall terminate upon the final acceptance by ACUA of the goods and/or services called for or the expiration of one year from the date first above set forth, whichever shall first occur.

5. Contractor further agrees that, in the event of breach of any condition of this Agreement by Contractor, ACUA may obtain substitute goods and services under such terms and conditions as ACUA may find advisable under the circumstances, and may recover from Contractor, in addition to any other remedies provided by law, any and all expenses incurred in obtaining such substitute goods and the difference between the cost of said substitute goods and the amount of ACUA's obligation to Contractor hereunder.

6. In the event that this Agreement, or any part hereof, is governed by the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq., contractor agrees to fully comply with said Act in addition to all other covenants set forth in this Agreement. By his signature hereon, contractor warrants that neither he nor any subcontractor employed to perform any work hereunder is on record with the New Jersey Department of Labor as having previously failed to pay prevailing wages in accordance with said Act.

7. Upon execution and submission of a properly executed Voucher, the faithful performance of this Contract and all covenants and agreements made herein, and the acceptance of the goods and/or services described herein by ACUA, ACUA agrees to pay to Contractor in accordance with the terms of the documents referenced in Paragraph 1. hereof, the sum of

Dollars) upon the formal approval of said payment by the members of ACUA.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed the day and year first set forth above.

ATTEST:

ATLANTIC COUNTY UTILITIES AUTHORITY

BY: BRIAN LEFKE, SECRETARY

BY: RICHARD S. DOVEY, PRESIDENT

ATTEST:

CONTRACTOR:

(ATTACH CORPORATE SEAL IF CORPORATION

BY:

PAYMENT AND PERFORMANCE BOND
(P.L. 1996, c. 81)
(REQUIRED STATUTORY FORM)

(DO NOT EXECUTE UNTIL AFTER CONTRACT AWARD)

Know all men by these presents, that we, the undersigned

As **PRINCIPAL** and

Name

Address

as **SURETY(IES)**, are hereby held and firmly bound unto the **ATLANTIC COUNTY UTILITIES AUTHORITY(OBLIGEE)** in the penal sum of _____dollars, for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed this day of _____, 20_____

The condition of the above obligation is such that whereas, the above named **PRINCIPAL** did on the _____ day of _____, 20_____ enter into a contract with the **ATLANTIC COUNTY UTILITIES AUTHORITY** which contract is for and is known as _____ which said contract is made a part of this the bond the same as though set forth herein;

Now, if the said **PRINCIPAL** shall well and faithfully do and perform the things agreed by to be done and performed according to the terms of said contract, and shall pay all lawful claims of beneficiaries as defined by N.J.S. 2A:44-143 for labor performed or materials, provisions, provender or other supplies forward, performing or completing of said contract, we agreeing and assenting that this undertaking shall be for the benefit of any beneficiary as defined in N.J.S. 2A:44-143 having a just claim, as well as for the **OBLIGEE** herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the **SURETY(IES)** for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said **SURETY** hereby stipulates and agrees that no modifications, omissions or additions in or to the terms of the said contract or in or to the plans or specifications therefore shall in anywise affect the obligation of said **SURETY** on its bond.

IN WITNESS WHEREOF, the PRINCIPAL and SURETY have executed this instrument under their several seals the day and date set forth above, the name and corporate seal of each corporate party being hereunto affixed and these presents duly signed by its proper officers, pursuant to authority of its governing body, and the SURETY has complied with all applicable requirements of law with respect to the Surety Disclosure Statement and Certification which is attached hereto and made a part hereof.

ON BEHALF OF INDIVIDUAL OR PARTNERSHIP

(Individual or General Partner)

(Address)

(Individual or General Partner)

(Address)

ON BEHALF OF CORPORATION

(Authorized Signatory - affix corporate seal)

Attest: _____

ON BEHALF OF SURETY

(Authorized Signatory - affix seal and attach valid,
original Power of Attorney and
Surety Disclosure Statement and Certification)

ATLANTIC COUNTY UTILITIES AUTHORITY SHALL NOT ACCEPT A PAYMENT OR PERFORMANCE BOND UNLESS THERE IS ATTACHED THERETO A SURETY DISCLOSURE STATEMENT AND CERTIFICATION TO WHICH EACH SURETY EXECUTING THE BOND SHALL HAVE SUBSCRIBED, AND WHICH SHALL HAVE SUBSTANTIALLY THE FOLLOWING FORM:

SURETY DISCLOSURE STATEMENT AND CERTIFICATION

_____, surety(ies) on the attached bond, hereby certifies(y) the following:

(1) The surety meets the applicable capital and surplus requirements of [R.S.17:17-6](#) or [R.S.17:17-7](#) as of the surety's most current annual filing with the New Jersey Department of Insurance.

(2) The capital (where applicable) and surplus, as determined in accordance with the applicable laws of this State, of the surety(ies) participating in the issuance of the attached bond is (are) in the following amount(s) as of the calendar year ended December 31, 20____ (most recent calendar year for which capital and surplus amounts are available), which amounts have been certified as indicated by certified public accountants (indicating separately for each surety that surety's capital and surplus amounts, together with the name and address of the firm of certified public accounts that shall have certified those amounts):

<u>Surety Company</u>	<u>Capital and Surplus</u>	<u>CPA Firm</u>
-----------------------	----------------------------	-----------------

(3) (a) With respect to each surety participating in the issuance of the attached bond that has received from the United States Secretary of the Treasury a certificate of authority pursuant to [31 U.S.C. § 9305](#), the underwriting limitation established therein and the date as of which that limitation was effective is as follows (indicating for each such surety that surety's underwriting limitation and the effective date thereof):

<u>Surety Company</u>	<u>Limitation</u>	<u>Date</u>
-----------------------	-------------------	-------------

(b) With respect to each surety participating in the issuance of the attached bond that has not received such a certificate of authority from the United States Secretary of the Treasury, the underwriting limitation of that surety as established pursuant to [R.S.17:18-9](#) as of (date on which such limitation was so established) is as follows (indicating for each such surety that surety's underwriting limitation and the date on which that limitation was established):

<u>Surety Company</u>	<u>Limitation</u>	<u>Date</u>
-----------------------	-------------------	-------------

(4) The amount of the bond to which this statement and certification is attached is \$_____.

(5) If, by virtue of one or more contracts of reinsurance, the amount of the bond indicated under item (4) above exceeds the total underwriting limitation of all sureties on the bond as set forth in items (3)(a) or (3)(b) above, or both, then for each such contract of reinsurance:

(a) The name and address of each such reinsurer under that contract and the amount of that reinsurer's participation in the contract is as follows:

_____ ; and

(b) Each surety that is party to any such contract of reinsurance certifies that each reinsurer listed under item (5)(a) satisfies the credit for reinsurance requirement established under [P.L.1993, c. 243 \(C.17:51B-1 et seq.\)](#) and any applicable regulations in effect as of the date on which the bond to which this statement and certification is attached shall have been filed with the appropriate public agency.

CERTIFICATE

(To be completed by an authorized certifying agent for each surety on the bond)

I, _____ (name of agent), as _____ (title of agent) for _____ (name of surety), a corporation/mutual insurance company/other (indicate type of business organization), domiciled in _____ (state of domicile), DO HEREBY CERTIFY that, to the best of my knowledge, the foregoing statements made by me are true, and ACKNOWLEDGE that, if any of those statements are false, this bond is VOIDABLE.

Dated this _____ day of _____, 20____

(Signature of certifying agent)

(Printed name of certifying agent)

(Title of certifying agent)

**INSTRUCTIONS FOR COMPLETING THE INITIAL PROJECT
WORKFORCE REPORT – CONSTRUCTION (AA201)**

DO NOT COMPLETE THIS FORM FOR GOODS AND/OR SERVICE CONTRACTS

- 1. Enter the Federal Identification Number assigned to the contractor by the Internal Revenue Service, or if a Federal Employer Identification Number has been applied for but not yet issued, or if your business is such that you have not or will not receive a Federal Identification Number, enter the social security number assigned to the single owner or one partner, in the case of a partnership.**
- 2. Note: The Department of Labor & Workforce Development, Construction EEO Monitoring Program will assign a contractor ID number to your company. This number will be your permanently assigned contractor ID number that must be on all correspondence and reports submitted to this office.**
- 3. Enter the prime contractor's name, address and zip code number.**
- 4. Check box if Company is Minority Owned or Woman Owned**
- 5. Enter the complete name and address of the Public Agency awarding the contract. Include the contract number, date of award and dollar amount of the contract.**
- 6. Enter the name and address of the project, including the county in which the project is located.**
- 7. Note: A project contract ID number will be assigned to your firm upon receipt of the completed Initial Project Workforce Report (AA201) for this contract. This number must be indicated on all correspondence and reports submitted to this office relating to this contract.**
- 8. Check "Yes" or "No" to indicate whether a Project Labor Agreement (PLA) was established with the labor organization(s) for this project.**
- 9. Under the Projected Total Number of Employees in each trade or craft and at each level of classification, enter the total composite workforce of the prime contractor and all subcontractors projected to work on the project. Under Projected Employees enter total minority and female employees of the prime contractor and all subcontractors projected to work on the project. Minority employees include Black, Hispanic, American Indian and Asian, (J=Journeyworker, AP=Apprentice). Include projected phase-in and completion dates.**
- 10. Print or type the name of the company official or authorized Equal Employment Opportunity (EEO) official include signature and title, phone number and date the report is submitted.**

This report must be submitted to the Public Agency that awards the contract and the Department of Labor & Workforce Development, Construction EEO Compliance Monitoring Program after notification of award, but prior signing the contract.

**THE CONTRACTOR IS TO RETAIN A COPY AND SUBMIT COPY TO THE PUBLIC AGENCY AWARDING
THE CONTRACT AND FORWARD A COPY TO:**

**NEW JERSEY DEPARTMENT OF LABOR & WORKFORCE DEVELOPMENT
CONSTRUCTION EEO COMPLIANCE MONITORING UNIT
P.O. BOX 209
TRENTON, NJ 08625-0209
(609) 292-9550**

STATE OF NEW JERSEY

DEPARTMENT OF LABOR & WORKFORCE DEVELOPMENT
CONSTRUCTION EEO COMPLIANCE MONITORING PROGRAM

Assignment

Code

FORM AA-201

Revised 11/11

INITIAL PROJECT WORKFORCE REPORT CONSTRUCTION

For instructions on completing the form, go to: http://www.state.nj.us/treasury/contract_compliance/pdf/aa201ins.pdf

1. FID NUMBER		2. CONTRACTOR ID NUMBER		5. NAME AND ADDRESS OF PUBLIC AGENCY AWARDING CONTRACT Name: Address:						
3. NAME AND ADDRESS OF PRIME CONTRACTOR (Name) (Street Address) (City) (State) (Zip Code)				6. NAME AND ADDRESS OF PROJECT Name: Address:			7. PROJECT NUMBER			
4. IS THIS COMPANY MINORITY OWNED [] OR WOMAN OWNED []				COUNTY			8. IS THIS PROJECT COVERED BY A PROJECT LABOR AGREEMENT (PLA)? YES <input type="checkbox"/>			
9. TRADE OR CRAFT	PROJECTED TOTAL EMPLOYEES				PROJECTED MINORITY EMPLOYEES				PROJECTED PHASE - IN DATE	PROJECTED COMPLETION DATE
	MALE		FEMALE		MALE		FEMALE			
	J	AP	J	AP	J	AP	J	AP		
1. ASBESTOS WORKER										
2. BRICKLAYER OR MASON										
3. CARPENTER										
4. ELECTRICIAN										
5. GLAZIER										
6. HVAC MECHANIC										
7. IRONWORKER										
8. OPERATING ENGINEER										
9. PAINTER										
10. PLUMBER										
11. ROOFER										
12. SHEET METAL WORKER										
13. SPRINKLER FITTER										
14. STEAMFITTER										
15. SURVEYOR										
16. TILER										
17. TRUCK DRIVER										
18. LABORER										
19. OTHER										
20. OTHER										

I hereby certify that the foregoing statements made by me are true. I am aware that if any of the foregoing statements are willfully false, I am subject to punishment.

(Signature)

10. (Please Print Your Name)

(Title)

(Area Code)

(Telephone Number)

(Ext.)

(Date)

INSTRUCTIONS FOR COMPLETING MONTHLY PROJECT WORKFORCE REPORT- (AA202)

1. Enter the prime contractor's name, address and zip code number.
2. Enter the **CONTRACTOR ID NUMBER** assigned by the Dept. of Labor & Workforce Development Construction EEO Compliance Monitoring Program.
3. Enter the Federal Identification Number assigned to the contractor by the Internal Revenue Service, or if a Federal Employer Identification Number has not been applied for or issued, or if your business is such that it will not receive a Federal Identification Number, enter the Social Security Number of the owner or of one partner, in the case of a partnership.
4. Reporting Period - enter the beginning and ending dates of the month for the report being submitted. (i.e., 1/1/00 – 1/31/00).
5. Enter the complete name of the public agency awarding the contract. Include the date of contract award.
6. Enter the name and location of the project, including the county in which the project is located.
7. Enter the **PROJECT NUMBER** assigned by the Dept. of Labor & Workforce Development Construction EEO Compliance Monitoring Program.
8. Enter the company name(s) of the contractor(s) performing work at the construction site. List the prime contractor first with subcontractor(s) following.
9. Enter the total percent (%) of project work the contractor or subcontractor has completed, to date.
10. Identify the trades or crafts applicable to the prime contractor and each subcontractor listed in column #8. Use a single line for each trade or craft.
11. Enter the total number of employees for each contractor at each level of classification (J=Journeyworker, AP=Apprentice) and the total number of each minority group - Black, Hispanic, American Indian, Asian and Female. Note: Column A shall include Total Number of employees. Columns B-E shall also include minority females. Column F shall include both non-minority and minority females.
12. Enter the total number of minority employees for each employer at each level of classification. Note: This shall be the sum of columns B-E.
13. Enter the Total Monthly work hours for all employees in each craft at each level of classification.
(A) Enter the Total Monthly minority work hours for each craft at each level of classification (Columns B-E).
(B) Enter the Total Monthly female work hours for each craft at each level of classification (Column F).
14. (A) Enter the Total Monthly PERCENT of minority work hours for each craft at each level of classification.
(B) Enter the Total Monthly PERCENT of female work hours for each craft at each level of classification.
15. Enter the Total Cumulative work hours for each craft at each level of classification.
(A) Enter the Total Cumulative minority work hours for each craft at each level of classification.
(B) Enter the Total Cumulative female work hours for each craft at each level of classification.
16. (A) Enter the Cumulative Percent of minority work hours for each craft at each level of classification.
(B) Enter the Cumulative Percent of female work hours for each craft at each level of classification.
17. Print or type the name of the company official submitting the report; include signature, title, telephone number, and date the report is submitted.

THE CONTACTOR SHOULD RETAIN ONE COPY AND SUBMIT A COPY TO THE PUBLIC AGENCY WHICH AWARDED THE CONTRACT. ANOTHER COPY MUST BE FORWARDED TO:

New Jersey Department of Labor & Workforce Development
Construction EEO Compliance Monitoring Program
PO Box 209
Trenton, NJ 08625-0209
609 292-9550

State Of New Jersey
Department of Labor & Workforce Development
Construction EEO Compliance Monitoring Program

MONTHLY PROJECT WORKFORCE REPORT - CONSTRUCTION

For instructions on completing the form, go to:

http://www.state.nj.us/treasury/contract_compliance/pdf/aa202ins.pdf

1. Name and address of Prime Contractor

2. Contractor ID Number

3. F ID or SS Number

4. Reporting Period

5. Public Agency Awarding Contract

Date of Award

6. Name and Location of Project

County

7. Project ID Number

(CITY) (STATE) (ZIP CODE)

8. CONTRACTOR NAME (LIST PRIME CONTRACTOR WITH SUBS FOLLOWING)	9. PERCENT OF WORK COMPLETED	10. TRADE OR CRAFT	CLASSIFICATION (SEE REVERSE)	11. NUMBER OF EMPLOYEES								12. TOTAL NO. OF MIN. EMP.	13. WORK HOURS		14. % OF WORK HRS		15. CUM. WORK HRS		16. CUM. % OF W/H		
				A. TOTAL	B. BLACK	C. HISPANIC	D. AMERICAN INDIAN	E. ASIAN	F. FEMALES	A. MIN. W/H	B. FEMALE W/H		A. MIN. W/H	B. FEMALE W/H	A. TOTAL WORK HOURS	B. FEMALE HOURS	A. % OF MIN. W/H	B. % OF FEM. W/H			
			J																		
			AP																		
			J																		
			AP																		
			J																		
			AP																		
			J																		
			AP																		

17. COMPLETED BY (PRINT OR TYPE)

(NAME) (SIGNATURE) (TITLE)

(AREA CODE) (TELEPHONE NUMBER) (EXT.) (DATE)

**GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT**

**Prepared by
THE ATLANTIC COUNTY UTILITIES AUTHORITY**

April 1995

**Revised May 1999
Revised February 2010
Revised December 2020**

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GENERAL CONDITIONS

ARTICLE 0 - CONTRACT TIME; LIQUIDATED DAMAGES

The Contract Time for this project is as follows:

One Hundred Fifty (150) successive calendar days from Notice to Proceed, weekends and holidays included. Substantial completion shall be defined by having a complete operational new system.

Liquidated Damages for this project are as follows:

The CONTRACTOR shall complete the project within the Contract Time or shall be liable for and shall pay to OWNER liquidated damages, in accordance with Section 21 hereof, for delay in the completion of the Work, as follows:

Two hundred fifty dollars (\$250.00) deducted from the contract price per calendar day of delay in final completion of the work.

ARTICLE 1--DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated, which are applicable to both the singular and plural thereof:

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

Agreement--The written contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment--The form prescribed by the OWNER to be used by CONTRACTOR in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

Approve--Is used in conjunction with action on submittals, applications, and requests, is limited to the duties and responsibilities of the Department of Engineering and OWNER as appropriate as stated in the Contract Documents.

Asbestos--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

Bid--The proposal of the bidder setting forth the prices for the Work to be performed and the terms thereof.

Bidding Documents--All documents prepared by the Department of Engineering for completion by the Bidder in the process of bidding and intended to be submitted by the Bidder in response to the bid solicitation, including but not limited to the advertisement or invitation to Bid, instructions to bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

Bonds--Performance and Payment bonds and other instruments of security as required by the Contract Documents.

Closeout Time--The time following Substantial Completion which is provided for Final Completion of the Work (i.e. completion of the Punch List and all items necessary to entitle the CONTRACTOR to Final Payment).

Contract Amendment--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, and which is intended to modify said terms as set forth in the Contract Documents at the time of execution of the Agreement.

Contract Documents--The Agreement, any and all Addenda issued prior to the opening of bids, CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to award), the Notice to Proceed, the Bonds, all General and Supplementary Conditions, the Specifications and the Drawings, together with all Written Amendments, Contract Amendments, Work Change Directives, Field Orders and Department of Engineering's written interpretations and clarifications issued pursuant to paragraphs 3.5, 3.6.1, and 3.6.3 on or after the Effective Date of the Agreement. Shop Drawing submittals approved pursuant to paragraphs 6.26 and 6.27 and the reports and drawings referred to in paragraphs 4.2.1 and 4.2.2 are not Contract Documents.

Contract Price--The money payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9 with respect to Contract Amendments).

Contract Time--The number of days stated in Article 0 of these General Conditions, during which the CONTRACTOR is required to achieve Substantial Completion of the Work. Procedural provisions of the Contract Documents which refer to the Contract Time shall also apply to the Closeout Time where the context so indicates.

Contractor--The person, firm or corporation with whom OWNER has entered into the Agreement.

Defective--An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to recommendation of final payment.

Directed--Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Department Of Engineering or OWNER", "requested by the Department Of Engineering or OWNER", and similar phrases.

Drawings--The drawings which show the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by the Department of Engineering and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined.

Effective Date of the Agreement--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

Field Order--A written order issued by the Department of Engineering which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Time.

Furnish--Means "supply and deliver, ready for unloading, unpacking, assembly, installation, and similar operations."

Hazardous Waste--The term Hazardous Waste shall have the meaning provided in CERCLA(42 USC 9601 et seq.), and shall include all substances set forth at 40 CFR 300 et seq. as the same shall be in existence on the Effective Date of the Agreement or as the same may be amended from time to time.

Indicated--refers to graphic representations, notes, or schedules on Drawings; Paragraphs or Schedules in Specifications; and similar requirements in Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used, it is to help locate the reference.

Install--Describes operations at the site including "unloading, unpacking, assembly, erection, anchoring, applying, working to dimension, protecting, cleaning, and similar operations."

Installer--The CONTRACTOR or an entity engaged by the CONTRACTOR as employee, Subcontractor, or sub-CONTRACTOR for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform. The term "experienced" when used with "installer" means having a minimum of five (5) previous projects similar in size to this project and being familiar with precautions required and with requirements of the Authority having jurisdiction.

Laws and Regulations (includes Laws or Regulations)--Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having or purporting to exercise jurisdiction and specifically including all applicable building and construction codes.

Liens--Liens, charges, security interests or encumbrances upon real property or personal property which are filed or purported to be filed, whether or not adjudicated to be valid.

Milestone--A principal event specified in the Contract Documents relating to an intermediate completion date or time, as and if specified in Article 0.

Notice of Award--The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with applicable conditions precedent as set forth in the Contract Documents the OWNER will sign and deliver the Agreement. The Notice of Award may be in the form of a letter or other informal document.

Notice to Proceed--A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.

OWNER--The Atlantic County Utilities Authority, which includes the Department of Engineering. The term "Department of Engineering" shall also include any and all consulting

engineers or other consultants not directly employed by the Authority but under the direction and control of the Authority's Chief Engineer. References to the Department of Engineering shall also be deemed references to the OWNER and/or its representative where the context so requires.

Partial Utilization--As further defined in the Contract Documents, the use by OWNER under the conditions defined, of a part of the Work prior to Substantial Completion of all the Work.

PCBs--Polychlorinated biphenyls.

Petroleum--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

Project--The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Project Site--This is the space available for construction activities, either exclusively or with others performing other construction on the project. The extent of the project site is shown on the Drawings.

Provide--Means to "furnish and install, complete and ready for use."

Punch List-- The list of items of the Work which is prepared by the Department of Engineering in conjunction with the Certificate of Substantial Completion, and the completion of which is required as a condition of receipt of final payment.

Radioactive Material--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

Regulation--Includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

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

Shop Drawings--All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

Specifications--Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and administrative details applicable thereto. The term shall include all information

and instructions contained in the Contract Documents with reference to the performance of the Work, including matter relating to the administration of the contract, whether or not said matter is contained in the section designated as Specifications.

Subcontractor--An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work. The term does not include Suppliers.

Substantial Completion--The point in the progress of the Work at which the Work has progressed to the point where it is sufficiently complete, in accordance with the Contract Documents, so that the Work can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to the Work refer to Substantial Completion thereof.

Supplementary Conditions--The part of the Contract Documents which amends or supplements these General Conditions, if published either as part of the bid documents or by addendum.

Supplier--A manufacturer, fabricator, supplier, distributor, material-man 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 any Subcontractor, and/or as defined in the New Jersey Mechanics Lien Law. Employees or Subcontractors of any Supplier who are present at the site of the Work to perform activities such as installation or testing of any equipment shall be considered Suppliers.

Testing Laboratories--A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

Underground Facilities--All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water or fluids of any type.

Unit Price Work--Work to be paid for on the basis of unit prices.

Work--The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

Work Change Directive--A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER ordering an addition, deletion or revision

in the Work. A Work Change Directive will not change the Contract Price or the Contract Time unless it is subsequently incorporated in an issued Contract Amendment.

Abbreviations: The following abbreviations may be in the Contract Documents and represent the organization named. The names are believed to be correct as of the date of the Contract Documents.

AA	-	Aluminum Associates
AAN	-	American Association of Nurserymen
AASHTO	-	American Association of State Highway and Transportation Officials
ACI	-	American Concrete Institute
AFBMA	-	Anti-Friction Bearing Manufacturers Association
AGA	-	American Gas Association
AGMA	-	American Gear Manufacturers Association
AISC	-	American Institute of Steel Construction
AISI	-	American Iron and Steel Institute
ANSI	-	American National Standards Institute
APA	-	American Plywood Association
API	-	American Petroleum Institute
ASCE	-	American Society of Civil Engineers
ASHRAE	-	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society for Testing and Materials
AWI	-	Architectural Woodwork Institute
AWPA	-	American Wood Preservers Association
AWS	-	American Welding Society
AWWA	-	American Water Works Association
CRSI	-	Concrete Reinforcing Steel Institute
DIPRA	-	Ductile Iron Pipe Research Association
FM	-	Factory Mutual System Fed. Spec. - Federal Specifications
IEEE	-	Institute of Electrical and Electronics Engineers
MSS	-	Manufacturers Standardization Society of the Valve and Fitting Industry
NAAMM	-	National Association of Architectural Metal Manufacturers
NCPI	-	National Clay Pipe Institute
NEC	-	National Electrical Code
NEMA	-	National Electrical Manufacturers Association
NFPA	-	National Fire Protection Association
NJDEPE	-	New Jersey Department of Environmental Protection and Energy
NJDOT	-	New Jersey Department of Transportation
NSF	-	National Sanitation Foundation
NWWA	-	National Water Well Association
OSHA	-	Occupational Safety and Health Administration
PCA	-	Portland Cement Association
PPI	-	Plastic Piping Institute
PS	-	Product Standard of the National Bureau of Standards
RFCI	-	Resilient Floor Covering Institute
SAE	-	Society of Automotive Engineers
SFPA	-	Southern Forest Products Association
SMACNA	-	Sheet Metal and Air Conditioning CONTRACTORs National Association
SPI	-	Society of the Plastics Industry
SSPC	-	Steel Structures Painting Council
TCA	-	Tile Council of America
UL	-	Underwriters Laboratory

Where reference is made to a standard issued by one of the above mentioned organizations it is understood that the latest revisions shall apply.

ARTICLE 2--PRELIMINARY MATTERS

Site Investigation and Representation: The CONTRACTOR shall visit and inspect the site on or before the Pre-Bid Conference date. By bidding, the CONTRACTOR warrants that as a result of examination and investigation of all available data, the CONTRACTOR can perform the work in a good and workmanlike manner and to the satisfaction of the Department of Engineering.

2.1. Delivery of Bonds: When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with the Contract Documents.

2.2. Copies of Documents: Department of Engineering shall furnish to CONTRACTOR without charge and upon CONTRACTOR's request up to ten copies (unless otherwise specified in the Contract Documents) of the Contract Documents if reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

2.3. Commencement of Contract Times; Notice to Proceed: The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement; however, in the event that circumstances beyond the OWNER's control (e.g. delay in the obtaining of permits or necessary land), which are not the result of negligence, bad faith, active interference or other tortious conduct on the part of the OWNER necessitate extension of this time, the OWNER may unilaterally extend this time for up to an additional thirty days without recourse by CONTRACTOR. The Contract Time shall be as set forth in Article 0.

2.4. Starting the Work: CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the site prior to the date on which the Contract Times commence to run unless Department of Engineering shall specifically so direct CONTRACTOR and CONTRACTOR shall agree.

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to Department of Engineering any conflict, error, ambiguity or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from Department of Engineering before proceeding with any Work affected. Except as to any such reported conflicts, errors, ambiguities, duplications or omissions, and to concealed or unknown conditions as defined in Paragraph 4.2 of the General Conditions, the CONTRACTOR warrants that the Contract Documents are adequate, free from any conflicts, errors or duplications and that there are no omissions. The CONTRACTOR shall not be entitled to an increase in the Contract Price or Contract Time on account of any error, inconsistency, duplication or omission in the Contract Documents that the

CONTRACTOR did not report to Department of Engineering. If the CONTRACTOR performs any construction activity involving an error, inconsistency, or omission in the Contract Documents that the CONTRACTOR did not report to the Department of Engineering, as appropriate, the CONTRACTOR shall be responsible for such performance and the correction thereof. In the event of any duplication, conflict or discrepancy, the best quality of the method of Work, materials and equipment shall be construed as the requirement with a reasonable credit accruing to OWNER in the event a lesser quality of the method of work, materials or equipment is directed. Any such duplication of work, conflict or discrepancy which is inferable by CONTRACTOR is not intended by the Contract Documents and any duplication specified shall not become a basis for extra cost to OWNER.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specifically set forth in the Specifications), CONTRACTOR shall submit to the Department of Engineering for review:

2.6.1. A preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2.6.2. A preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal;

2.6.3. A preliminary schedule of values for all of The Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.7. Before any Work at the site is started, CONTRACTOR shall deliver to Department of Engineering, with copies to each additional insured identified in the Contract Documents, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR is required to purchase and maintain in accordance with the Contract Documents.

Project Meetings:

2.8. This Section specifies requirements for Project meetings including:

Pre-Construction Conference.

Pre-Installation Conferences.

Progress Meetings.

PRE-CONSTRUCTION CONFERENCE: A pre-construction conference will be held as soon as practicable after award of contract, and prior to issuance of Notice to Proceed. The

purpose of this conference will be for the parties to review their responsibilities and personnel assignments and to discuss the following:

- Tentative construction schedule;
- Critical sequencing;
- Equipment deliveries;
- Use of premises;
- Procedures for processing payment requests;
- Procedures for requesting and processing Contract Amendments;
- Such other matters which in the Department of Engineering's judgment are relevant to the orderly and expeditious performance of the Work.
- Quality Control Plan

The conference will be attended by the OWNER's responsible representatives. CONTRACTOR is to be represented by persons with sufficient authority to commit the CONTRACTOR and all relevant Subcontractors and suppliers with respect to all issues listed above. Determinations made at the Pre-Construction Conference with respect to the above matters shall be binding upon CONTRACTOR.

On or before the scheduled date of the Pre-Construction Conference, or within ten (10) calendar days of written notification of award, whichever date is earlier, CONTRACTOR shall provide the OWNER with the following: a) All necessary copies of the signed Agreement (which will be enclosed for CONTRACTOR's signature with the notice of the pre-construction conference); b) All required bonds and certificates of insurance; and c) All required affirmative action documents. These submissions will be reviewed by the Department of Engineering following the Pre-Construction Conference and if all documents are acceptable a copy of the agreement signed by the OWNER will thereafter be forwarded to CONTRACTOR.

PRE-INSTALLATION CONFERENCE: A Pre-Installation Conference will be conducted before each activity that requires coordination with other construction. The Installer and representatives of manufacturers and fabricators involved in the installation, and coordination or integration with other materials and installations that have preceded or will follow, shall attend. CONTRACTOR shall advise the OWNER and DEPARTMENT OF ENGINEERING of scheduled meeting dates.

a) Agenda: Review progress of other activities and preparations for the activity under consideration at each conference, including time schedules, manufacturer's recommendations, weather limitations, substrate acceptability, compatibility problems and inspection and testing requirements.

b) CONTRACTOR shall record significant discussions, agreements and disagreements of each conference, along with the approved schedule. Distribute

the meeting record to everyone concerned, promptly, including the OWNER and DEPARTMENT OF ENGINEERING.

c) CONTRACTOR shall not proceed if the conference cannot be successfully concluded. CONTRACTOR shall initiate necessary actions to resolve impediments and reconvene the conference at the earliest feasible date.

PROGRESS MEETINGS: CONTRACTOR shall conduct progress meetings at regular intervals to be determined at the Pre-Construction Meeting. CONTRACTOR shall also notify OWNER and DEPARTMENT OF ENGINEERING of scheduled dates. Progress meeting dates should be coordinated with preparation of the payment request.

Attendees: The OWNER, DEPARTMENT OF ENGINEERING, CONTRACTOR, each Subcontractor, supplier or other entity concerned with progress or involved in planning, coordination or performance of future activities shall be represented by persons familiar with the Project and authorized to conclude matters relating to progress.

Agenda: Review minutes of the previous progress meeting. Review significant items that could affect progress. Include topics appropriate to the current status of the Project.

CONTRACTOR'S Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the CONTRACTOR's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

Review the present and future needs of each entity present, including such items as:

- Status of progress with reference to Contract Time;
- Sequences;
- Deliveries;
- Off-site fabrication problems;
- Site utilization;
- Temporary facilities and services;
- Hazards and risks;
- Quality and Work standards;
- Contract Amendments;
- Documentation of information for payment requests.

Reporting: No later than five (5) days after each meeting, distribute copies of minutes of the meeting to each party present and to parties who should have been present. Include a summary, in narrative form, of progress since the previous meeting.

Daily Construction Reports: CONTRACTOR shall prepare a daily construction report, recording information concerning events at the site. Submit duplicate copies to the DEPARTMENT OF ENGINEERING and OWNER at weekly intervals. Include the following information:

- List of Subcontractors at the site;
- High and low temperatures, general weather conditions;
- Accident, stoppages, delays, shortages, losses;
- Emergency procedures;
- Contract Amendments received, implemented.

2.9. Initially Acceptable Schedules: At the Pre-Construction Conference, attended by CONTRACTOR, OWNER and others as appropriate the schedules shall be submitted in accordance with paragraph 2.6. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until the schedules are submitted to and acceptable to The Department of Engineering as provided below. The progress schedule will be acceptable as providing an orderly progression of the Work to completion within any specified Milestones and the Contract Times, but such acceptance will neither impose on Department of Engineering responsibility for the sequencing, scheduling or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility thereof. CONTRACTOR's schedule of Shop Drawing and Sample submissions will be acceptable to Department of Engineering as providing a workable arrangement for reviewing and processing the required submittals. CONTRACTOR's schedule of values will be acceptable to Department of Engineering as to form and substance.

2.10 Construction Schedule: This section supplements the section "Initially Acceptable Schedules" in the General Conditions Article 2, and "Progress Schedule" in the General Conditions Article 6.

In order to facilitate coordination and fitting, The CONTRACTOR shall prepare a "Plan of Operations" which shall show concisely the manner in which work will be started, prosecuted, the interrelationship of the work under the various trades, time upon which different phases of the work are to be started, methods and speed for progressing the different phases and dates upon which the certain sub-contracts are dependent upon that under other sub-contracts.

The Plan of Operations shall be updated and submitted to the Department of Engineering at the beginning of each calendar month.

After review of the above document, the CONTRACTOR shall be responsible for seeing that it is adhered to and shall maintain proper coordination between each trades work.

The CONTRACTOR shall furnish materials and equipment which are safe, efficient, appropriate and large enough to secure a satisfactory quality of work and rate of progress which will insure the completion of the work within the time stipulated in the bid proposal. If at any time such materials and equipment appear to the Department of Engineering to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he shall advise the Department of Engineering who may then order the CONTRACTOR to increase the efficiency, change the character or increase the materials and equipment, and the CONTRACTOR shall conform to such order. Failure of the Department of Engineering to give such order shall in no way relieve the CONTRACTOR of his obligations to secure the quality of the work and rate of progress required.

If in the opinion of the Department of Engineering, the CONTRACTOR falls behind in his work, CONTRACTOR shall take such steps as may be necessary to improve his progress, and the days of work, and /or the amount of construction staffing, and/or, to the extent permitted by law, to institute or increase overtime operations, all without additional cost to the OWNER.

Whenever the CONTRACTOR cannot comply with the requirements of the DEPARTMENT OF ENGINEERING without the prior consent, certification or other action of any governmental body or official, the CONTRACTOR shall use his best efforts to obtain such consent, certification or other action, and to that end the OWNER will cooperate with the CONTRACTOR.

Failure of the CONTRACTOR to comply with the requirements of the Department of Engineering shall be grounds for determination by the OWNER that the CONTRACTOR is not prosecuting the work with such diligence as will insure completion within the time specified.

ARTICLE 3--CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire Agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the State of New Jersey specifically including but not limited to the Local Public Contracts Law, N.J.S.A. 40A:11-1 et seq. as the same may be in effect at Effective Date of the Agreement or as it may be amended in relevant part during the performance of the Agreement.

3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment such words or phrases shall be interpreted in accordance with that meaning. Large scale details on the Drawings shall take precedence over measurements and figured dimensions shall take precedence over any scale, except when they are in obvious error, and in such instance the matter shall be referred to the and Department of Engineering for correction before proceeding with the work. Clarifications and interpretations of the Contract Documents shall be issued by the Department of Engineering as provided in paragraph 9.4.

3.3. Reference to Standards and Specifications of Technical Societies; Reporting and Resolving Discrepancies:

3.3.1. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents. CONTRACTOR, all Subcontractors and all Suppliers acknowledge their familiarity and experience with generally accepted published standards of quality and workmanship applicable to the portions of the Work performed by them. The requirements of any indicated reference standard are hereby incorporated into the specifications and made a part thereof, to the extent indicated by the applicable reference thereto.

3.3.2. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the Work or of any such standard, specification, manual or code or of any instruction of

any Supplier referred to in paragraph 6.5, CONTRACTOR shall report it to the Department of Engineering in writing at once, and, CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as authorized by paragraph 6.23) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.5 or 3.6;

3.3.3. Except as otherwise specifically stated in the Contract Documents or as may be provided by amendment or supplement thereto issued by one of the methods indicated in paragraph 3.5 or 3.6, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and:

3.3.3.1. The provisions of any such standard, specification, manual, or instruction (whether or not specifically incorporated by reference in the Contract Documents);
or

3.3.3.2. The provisions of any such Laws or Regulations applicable to the performance of the Work (unless assigning precedence to the Contract Documents would result in violation of such Law or Regulation).

No provision of any such standard, specification, manual, or instruction shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR, or any of their Subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to Department of Engineering, Consultants, agents or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of paragraph 9.13 or any other provision of the Contract Documents.

Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16-Division format and MASTERFORMAT numbering system.

Language used in the Specifications is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the context so indicates.

Abbreviations and Names: Where acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean they recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable. Refer to the "Encyclopedia of Associations", published by Gale Research Co., available in most libraries.

Imperative language: Is used generally. Requirements expressed in the imperative mood are to be performed by the CONTRACTOR. At certain locations in the text subjective

language is used to describe responsibilities that must be fulfilled indirectly by the CONTRACTOR or by others when so noted.

The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

3.4. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of Department of Engineering as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed 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 shall not be effective to assign to the Department of Engineering any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.13 or any other provision of the Contract Documents.

Amending and Supplementing Contract Documents:

3.5. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.5.1. A Contract Amendment (pursuant to paragraph 10.4), or

3.5.2. A Work Change Directive (pursuant to paragraph 10.1).

3.6. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.6.1. A Field Order (pursuant to paragraph 9.5),

3.6.2. Department of Engineering's approval of a Shop Drawing or Sample (pursuant to paragraphs 6.26 and 6.27), or

3.6.3. Department of Engineering's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.7. CONTRACTOR, and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER (i) shall not 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 the Department of Engineering, and (ii) shall not reuse any of such Drawings, Specifications, or other documents.

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

4.1. Availability of Lands: OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto also described in the Contract Documents. Department of Engineering shall advise CONTRACTOR as to any encumbrances or restrictions (e.g. easements, rights of access or entry, deed restrictions, and similar burdens on the land) which are not of general application but specifically affect the use of the lands so furnished in the performance of the Work or activities related thereto. In the event that OWNER's inability to provide CONTRACTOR with the use of the lands described in the Contact Documents as necessary for the Work causes CONTRACTOR can incur delays in the performance of the work, or expenses that would not have been incurred but for said inability on OWNER's part to supply such lands, then CONTRACTOR shall (subject to any limitations contained elsewhere in the Contract Documents) be entitled to a Contract Amendment adjusting the Contract Time and/or amount in order to compensate CONTRACTOR for such delay. OWNER shall not be required to compensate CONTRACTOR under this section by reason of any inability of CONTRACTOR to use public or private roadways or other access routes which OWNER does not own or legally control. Unless specifically stated otherwise elsewhere in the Contract Documents, CONTRACTOR shall provide, at his own expense, for all lands and access thereto which shall be necessary for temporary construction facilities or storage of materials and equipment.

4.2. Subsurface and Physical Conditions:

4.2.1. Reports and Drawings: Reference is made to the Specifications for identification of:

4.2.1.1. Subsurface Conditions at the Site: Those reports of explorations and tests of subsurface conditions at or contiguous to the site that have been utilized by OWNER in preparing the Contract Documents; and

4.2.1.2. Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) that have been utilized in preparing the Contract Documents.

4.2.2. Limited Reliance by CONTRACTOR Authorized Technical Data: Except for such reliance on such "technical data", CONTRACTOR may not rely upon or make any claim against OWNER, with respect to:

4.2.2.1. 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

4.2.2.2. Other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or

4.2.2.3. Any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.2.3. Notice of Differing Subsurface or Physical Conditions: If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:

4.2.3.1. Is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is materially inaccurate, or

4.2.3.2. Is of such a nature as to require a modification in the Contract Documents, or

4.2.3.3. Differs materially from that shown or indicated in the Contract Documents, or

4.2.3.4. 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 conditions affected thereby or performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.23), notify Department of Engineering in writing about such condition. CONTRACTOR shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so. The site conditions contemplated by this Subparagraph include, but are not limited to, materials containing Asbestos, polychlorinated biphenyl (PCB), Petroleum, Hazardous Waste or Radioactive Material.

4.2.4. Department of Engineering's Review: Department of Engineering will promptly review the pertinent conditions, determine the necessity of obtaining additional exploration or tests with respect thereto and advise the CONTRACTOR of findings and conclusions.

4.2.5. Possible Contract Documents modification: If Department of Engineering concludes that a modification in the Contract Documents is required as a result of a condition that meets one or more of the categories in paragraph 4.2.1., a Work Modification Directive or a Contract -Amendment will be issued as provided in Article 10 to reflect and document the consequences of such change.

4.2.6. Possible Price and Time Adjustments: An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such uncovered or revealed condition causes an increase or decrease in CONTRACTOR'S cost of, or time required for performance of, the Work; subject, however, to the following:

4.2.6.1. Such condition must meet any one or more of the categories described in paragraphs 4.2.3.1 through 4.2.3.4, inclusive;

4.2.6.2. A modification in the Contract Documents pursuant to paragraph 4.2.5 will not be an automatic authorization of nor a condition precedent to entitlement to any such adjustment;

4.2.6.3. With respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.10 and 11.9; and

4.2.6.4. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Times if;

4.2.6.4.1. CONTRACTOR knew of the existence of such conditions at the time of; or

4.2.6.4.2. The existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Specifications or Bidding or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

4.2.6.4.3. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.2.3.

If Department of Engineering and CONTRACTOR are unable to agree on entitlement to or as to the amount or length of any such equitable adjustment in the Contract Price or Contract Times, a claim may be made therefor as provided in Articles 11 and 12. However, the OWNER, shall not under any circumstances be liable to CONTRACTOR for any costs, losses or damages sustained by CONTRACTOR in connection with any other project or anticipated project.

4.3. Physical Conditions-Under Facilities:

4.3.1. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to Department of Engineering by the OWNERS of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Contract Documents:

4.3.1.1. Department of Engineering shall not be responsible for the accuracy or completeness of any such information or data; and

4.3.1.2. The cost of all of the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the Department of Engineering of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work.

4.3.2. Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.23), identify the Department of Engineering of such Underground Facility and give written notice to Department of Engineering, will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the Underground Facility. If Department of Engineering concludes that a modification in the Contract Documents is required, a Work Modification Directive or a Contract Amendment will be issued as provided in Article 10 to reflect and document such consequences. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Department of Engineering and CONTRACTOR are unable to agree on entitlement to or the amount or length of any such adjustment in Contract Times or Contract Price, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. However, the OWNER shall not be liable to CONTRACTOR for any costs, losses or damages incurred or sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.4. Reference Points: Department of Engineering shall provide engineering surveys to establish reference points for construction which in the Department of Engineering'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 shall make no changes or relocations without the prior written approval of Department of Engineering. CONTRACTOR shall report to the Department of Engineering whenever any reference point 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 by professionally qualified personnel.

4.5. Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material:

4.5.1. OWNER shall be responsible for any Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. OWNER shall not be responsible for any such materials brought to the site by CONTRACTOR, Subcontractors, Suppliers or anyone for whom CONTRACTOR is responsible.

ARTICLE 5--BONDS AND INSURANCE

Performance, Payment and Other Bonds:

5.1. CONTRACTOR shall furnish a Performance and Payment Bond in New Jersey statutory form, 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. This Bond shall remain in effect at least until one year 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 Bidding and/or other Contract Documents. All Bonds signed by an agent must be accompanied by appropriate power of attorney and surety disclosure statements. All such bonds shall be in the full amount of the contract and shall increase in the event of any increase in the Contract Price without further action by the CONTRACTOR or its surety. CONTRACTOR shall be fully responsible for and shall hold OWNER harmless from, all loss, costs, damages and expense (including, without limitation, attorney's fees) incurred as a result of CONTRACTOR'S failure to perform as aforesaid with respect to the furnishing of Bonds and such costs and expenses as CONTRACTOR may incur as a result of said default shall not be deemed a cost of the Work. CONTRACTOR shall be deemed to be in default of its obligation hereunder should a material adverse change in its financial conditions cause any revocation of any Bond or result in the failure of CONTRACTOR to obtain performance and/or labor and material payment bonds covering the Work to be performed by CONTRACTOR and/or any Subcontractor or material-men as provided for herein.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated or suspended in the State of New Jersey or otherwise ceases to meet the requirements of the Contract Documents, CONTRACTOR shall within ten days thereafter substitute another Bond and surety, both of which must be acceptable to OWNER.

5.3. Licensed Sureties and Insurers; Certificates of Insurance:

5.3.1. All Bonds 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 to issue Bonds for the applicable limits and coverages. Such surety and insurance companies shall also meet such additional requirements and qualifications, if any, as may be provided in the Contract Documents.

5.3.2. CONTRACTOR shall deliver to Department of Engineering, with copies to each additional insured indicated by the Contract Documents, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain in accordance with the Contract Documents.

5.4 CONTRACTOR's Liability Insurance: CONTRACTOR shall provide insurance in the form and limits specified in the Contract Documents.

5.5. If OWNER has any objection to the coverage afforded by or other provisions of the Bonds required to be purchased and maintained by CONTRACTOR in accordance with the Contract Documents on the basis of their not complying with the Contract Documents, the OWNER shall so notify the CONTRACTOR. CONTRACTOR shall provide the OWNER with such additional information as the OWNER shall require. Without prejudice to any other right or remedy available to it OWNER may, in the event of a failure of CONTRACTOR to maintain bonds or insurance in force after signature of the Agreement, obtain equivalent Bonds or insurance to protect its interests at CONTRACTOR'S expense and a Contract Amendment shall be issued to adjust the Contract Price accordingly.

ARTICLE 6--CONTRACTOR'S RESPONSIBILITIES

Superintendence:

6.1. CONTRACTOR hereby represents and warrants to Department of Engineering that CONTRACTOR is a business entity which is experienced and is fully capable and skilled in the construction of projects of the type described in the Contract Documents, is licensed to engage in the general construction business in the jurisdiction where the site is located and is in compliance with all applicable Laws and Regulations. Upon request by Department of Engineering, CONTRACTOR and his Subcontractors and Suppliers shall make available to Department of Engineering such audited and/or unaudited financial statements of CONTRACTOR as Department of Engineering may reasonably request. Further, CONTRACTOR shall promptly advise Department of Engineering of any occurrence, event, fact, or other matter that has had, or might have a material adverse effect upon the financial condition of CONTRACTOR, Subcontractor or Supplier.

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, but CONTRACTOR shall not be responsible for the negligence of others in the design or specification of a specific means, method, technique, sequence or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work site at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to the Department of Engineering except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. 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. Except as otherwise required for the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not perform overtime work or the performance of Work on Saturday, Sunday or any legal holiday without Department of Engineering's written consent given after prior written notice to Department of Engineering.

If the Work is to be performed by trade unions, the CONTRACTOR shall make all necessary arrangements to reconcile, without delay, damage, or cost to the OWNER and without recourse to

the OWNER, any conflict between the Contract Documents and any agreements or regulations of any kind at any time in force among members or councils which regulate or distinguish what activities shall not be included in the work of any particular trade.

OWNER takes no position with respect to whether or not any part of the Work to be performed by union or non-union personnel. CONTRACTOR shall be solely responsible for all aspects of labor relations with respect to the Work. In the event that any organized labor activity shall take place at the location of the Work such as picketing, distribution of literature, or similar activity against CONTRACTOR or any Subcontractor or supplier providing goods or services, CONTRACTOR and not OWNER shall be responsible for ensuring, by appropriate legal action if necessary, that such activity does not interfere in any way with any activities of OWNER, its employees, customers, contractors, business invitees, or other persons having business with OWNER at or near the site of the Work. CONTRACTOR shall have no claim against OWNER by reason of any increase in cost arising in any way from the use of union, as opposed to non-union, personnel in the performance of the work, or by reason of any delay in any way occasioned by labor activity in connection with the Work.

6.4. Unless otherwise set forth in the Specifications, CONTRACTOR shall furnish and assume full responsibility for all 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 furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

Progress Schedule/Daily Reports:

6.6. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.9 as it may be adjusted from time to time as provided below:

6.6.1. CONTRACTOR shall submit to Department of Engineering for acceptance (to the extent indicated in paragraph 2.9) proposed adjustments in the progress schedule that will not change the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the Specifications applicable thereto.

6.6.2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of paragraph 12.1.

Such adjustments may only be made by a Contract Amendment in accordance with Article 12.

6.6.3. At the beginning of each work day or shift, the CONTRACTOR shall furnish to the Department of Engineering or his representative a daily report listing the manpower and equipment on site that work day along with a proposed schedule of work activities.

6.7. Substitutes and "Or-Equal" Items:

6.7.1. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quality required. Other items of material or equipment or material or equipment of other Suppliers may be accepted by Department of Engineering under the following circumstances:

6.7.1.1. "Or-Equal": If in the Department of Engineering's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by the Department of Engineering as an "or-equal" item, in which case review and approval of the proposed item may, in Department of Engineering's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.

6.7.1.2. Substitute Items: If in Department of Engineering's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under subparagraph 6.7.1.1, it will be considered a proposed substitute item. CONTRACTOR shall submit sufficient information as provided below to allow Department of Engineering to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. The procedure for review by the Department of Engineering will include the following, any additional procedures as may be set forth in the Specifications, and as Department of Engineering may decide is appropriate in a particular case. Requests for review of proposed substitute items of material or equipment will not be accepted by Department of Engineering from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall first make written application to Department of Engineering for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use 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 work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject

to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by Department of Engineering in evaluating the proposed substitute. No Contract Amendment based on Subcontractor claims not disclosed in the application, whether or not known to the CONTRACTOR, will be honored. It is the CONTRACTOR's responsibility to investigate and advise the OWNER as to any potential Subcontractor claims arising from substitutions. Department of Engineering may require CONTRACTOR to furnish additional data about the proposed substitute.

6.7.1.3. CONTRACTOR'S Expense: All data to be provided by CONTRACTOR in support of any proposed "or-equal" or substitute item will be at CONTRACTOR's expense. The CONTRACTOR shall reimburse the OWNER for any and all expenses associated with review of the substitute item at a cost of \$75.00/hr per individual utilized to complete the review process.

6.7.2. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to Department of Engineering. CONTRACTOR shall submit sufficient information to allow Department of Engineering, in Department of Engineering's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by the Department of Engineering will be similar to that provided in subparagraph 6.7.1.2.

6.7.3. Department of Engineering's Evaluation: Department of Engineering will need to establish a time period within which to evaluate each proposal or submittal made pursuant to paragraph 6.7.1.2 and 6.7.2. Department of Engineering will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without Department of Engineering's prior specific written acceptance, which may be evidenced by a Work Change Directive. Department of Engineering may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any "or-equal" or substitute. Department of Engineering will record time required evaluating substitutes proposed or submitted by CONTRACTOR pursuant to paragraphs 6.7.1.2 and 6.7.2 and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby.

6.8 Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to Department of Engineering as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom Department of Engineering may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

The provisions of this Paragraph shall be subject to the New Jersey Local Public Contracts Law as it has been judicially interpreted with respect to the naming and substitution of Subcontractors.

6.8.2. As to Subcontractors and suppliers not required to be identified during the bidding process, Department of Engineering's acceptance of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be adjusted by the difference in the cost occasioned by such substitution and an appropriate Contract Amendment will be issued. No acceptance by Department of Engineering of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of Department of Engineering to reject defective Work.

6.9 Contracts Involving Subcontractors and Suppliers

6.9.1. CONTRACTOR shall be fully responsible to Department of Engineering for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between Department of Engineering and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.9.2. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR. CONTRACTOR shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the OWNER through CONTRACTOR.

6.10. 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.

6.11. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.6 or 5.7, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, and all other additional insureds for all losses and damages caused by any of the perils causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.12. Patent Fees and Royalties: 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. The review by the Department of Engineering of any method of construction, invention, appliance, process, article, device or material of any kind shall be for its adequacy for the Work, and shall not be an approval for the use thereof by CONTRACTOR in violation of any patent or other rights of any third person. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless the OWNER and the officers, directors, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents.

6.13. Permits: Unless otherwise required by law or provided in the Contract Documents, CONTRACTOR shall obtain and pay for all construction permits, road opening permits, licenses, certificates etc. required by regulatory agencies, utilities, etc. for execution of work under this contract. Department of Engineering shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids. CONTRACTOR shall pay all charges of utility OWNERS for connections to the Work, and OWNER shall pay all charges of such utility OWNERS for capital costs related thereto such as plant investment fees.

Whenever any product is specified by references to Federal Specifications, ASTM Standards, American Standard Specifications or other "association" standards, the CONTRACTOR shall

present an affidavit from the manufacturer certifying that the product complies with the particular standard specification. All references are to be the latest edition of standards at time of bid closing. When necessary, requested or specified, supporting test data shall be submitted to substantiate compliance.

Permits, Licenses, and Certificates: For the Department of Engineering's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents; correspondence and records established in conjunction with compliance with standards; and regulations bearing upon performance of the Work.

6.14 Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, the OWNER shall not be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.3.2.

6.15 Taxes: 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 State of New Jersey which are applicable during the performance of the Work. CONTRACTOR shall not pass through to OWNER any taxes for which the OWNER is exempted by the laws of the State of New Jersey. OWNER shall cooperate with CONTRACTOR in providing evidence of its tax-exempt status.

6.16 Use of Premises: CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless the OWNER and anyone directly or indirectly employed by them from and against all claims, costs, losses and damages (including, but not limited to, fees of engineers, architects, attorneys and other

professionals and court and arbitration or other dispute resolution costs) arising-out of or resulting from any claim or action, legal or equitable, brought by any such OWNER or occupant against the OWNER or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

The CONTRACTOR shall at all times and especially during inclement weather or suspension of work, carefully protect his work and materials against damage or injury. If, in the opinion of the Department of Engineering, any work or material shall have been damaged or injured by reason or failure on the part of the CONTRACTOR, or any of his Subcontractors so to protect his work, such materials shall be removed and replaced without additional cost to the OWNER.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. All waste materials, including recyclable materials, shall be removed, handled, and disposed of strictly in accordance with Laws and Regulations.

CONTRACTOR shall leave the site clean and ready for occupancy by OWNER at Substantial Completion of the work. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Site Safety and Work Site Conditions:

6.19 This section shall consist of maintaining clean, orderly, hazard-free conditions at the work site.

6.19.1 General

6.19.1.1 The work site shall be maintained in accordance with governmental requirements applicable to work site cleanliness, and in a neat, orderly and hazard-free condition until final acceptance of the work. Areas adjacent to the work site shall be kept free from hazards caused by construction activities, and shall be regularly inspected for hazardous conditions caused by construction activities.

6.19.1.2 Volatile wastes shall be stored in covered metal containers, and shall be removed from the work site daily. Accumulations of wastes which create hazardous conditions shall be prevented. Cleaning and disposal operations shall be conducted in accordance with anti-pollution laws and governmental requirements applicable to those operations. Rubbish generated as a result of this project, but not as a result

of clearing and grubbing, and other construction wastes shall be disposed of at an approved facility.

6.19.1.3 All excavations and trenches shall be shored, sheathed and braced or sloped in accordance with all applicable Occupational Safety and Health Administration (OSHA) rules and regulations pertinent to excavation, trench, and confined entry operations.

6.19.1.4 Each piece of construction equipment must meet all OSHA rules and regulations for construction equipment. The CONTRACTOR shall submit written verification of compliance prior to commencement of work.

6.19.1.5 The CONTRACTOR shall employ the use of a portable explosimeter (gas/oxygen) or other approved device to protect, as required, all forces involved in the construction.

6.19.1.6 All personnel on site shall, at the minimum, conform to OSHA Level "D" personal protection, including but not limited to:

- Boots/Shoes, Safety with steel toe & shank
- Safety Glasses
- Hard Hat
- Hearing Protection

6.19.1.7 The CONTRACTOR shall comply with all OSHA and other local, state and federal rules and regulations regarding confined space entry, landfill safety and all other site operations.

6.19.1.8 The CONTRACTOR shall be aware of and shall notify his personnel of all work site hazards. The CONTRACTOR shall limit smoking to restricted areas on site.

6.19.2 Materials

6.19.2.1 Cleaning materials shall be the types recommended by the manufacturer of the surface to be cleaned.

6.19.3 Methods

6.19.3.1 Cleaning shall be executed every workday during the project; structures, grounds, and areas of the work site and public and private properties immediately adjacent to the work site and temporary sanitary facilities shall be maintained free from accumulations of waste materials and rubbish which has been caused by construction operations. Waste materials and rubbish shall be placed in dump containers.

6.19.3.2 Loose material on open decks and other exposed surfaces shall be either removed or secured either at the end of each work day or more often to maintain the work site in a hazard free condition. Securing shall prevent dislodgement by wind and other forces.

6.19.3.3 If it is impractical to immediately remove dry waste and rubbish, that material shall be wetted down to lay dust and prevent blowing of dust.

6.19.3.4 Dump containers shall be emptied promptly at least once a week; contents shall be legally disposed of.

6.19.3.5 Waste materials, debris, and rubbish shall be handled in a controlled manner, and shall not be dropped nor thrown from heights.

6.19.3.6 Spillages, other than potable water, on unpaved surfaces within drip lines of shrubs and trees indicated to remain, shall be immediately removed.

6.19.3.7 Cleaning operations shall occur at times when dust and other contaminants will not fall on wet and newly painted surfaces.

6.19.3.8 Paved surfaces within any right-of-way shall be broomed cleaned, and ground surfaces within any right-of-way shall be raked-cleaned.

6.19.3.9 Cleaning shall be maintained until final acceptance.

6.19.3.10 Any road surface or other area damaged by the CONTRACTOR shall be repaired to original condition by the CONTRACTOR at no additional cost to the OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work and the OWNER and its agents and employees, including its engineers, shall have no responsibility for initiating, maintaining, inspecting, or supervising any safety program or practice. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. All persons on the Work site or who may be affected by the Work;

6.20.2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

The CONTRACTOR shall take all necessary precautions as may be required by laws and regulations and the Contract Documents and as determined by the Department of Engineering, for the protection of the OWNER'S and other contractor's property, as well as adjacent property. By such provisions, the CONTRACTOR shall also protect all persons who may be on the premises or on adjacent areas affected by the CONTRACTOR'S operations. The CONTRACTOR shall take measures to assure his personnel and all Subcontractor's personnel under his jurisdiction observe applicable safety precautions while working on the OWNER'S property.

6.20.4. Hot Work Procedures: Hot work definition: The term "hot-work" means hot riveting, welding, burning, open flame use, or other mechanical spark-producing operations or those operations resulting in high temperature surfaces. It also includes opening electrical systems which have the potential of arcing or otherwise igniting a flammable material.

6.20.5. Fire Prevention and Protection: The CONTRACTOR shall perform all work in a fire-safe manner. He shall supply and maintain on the site adequate fire-fighting equipment capable of extinguishing incipient fires. The CONTRACTOR shall comply with applicable federal, state, and local fire-prevention regulations. Where these regulations do not apply, applicable parts of the National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241) shall be followed.

6.20.6. Accident Reports: If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the Department of Engineering. In addition, the CONTRACTOR must promptly report in writing to the Department of Engineering all accident whatsoever arising out of, or in connection with, the performance of the work whether on, or adjacent to, the site, giving full details and statements of witnesses. If a claim is made by anyone against the CONTRACTOR or any Subcontractor on account of any accident, the CONTRACTOR shall promptly report the facts in writing to the Department of Engineering, giving full details of the claim.

CONTRACTOR shall notify Department of Engineering of adjacent property and of Underground Facilities and utility OWNERS when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property.

All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR. CONTRACTOR's duties and responsibilities for

safety and for protection of the Work shall continue until such time as all the Work is completed and CONTRACTOR is advised in accordance with paragraph 14.13 that the Work is acceptable.

6.21. Safety Representative: CONTRACTOR shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.22. Hazardous Communication Programs: CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with Laws or Regulations.

6.23. Emergencies: In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from Department of Engineering, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give Department of Engineering prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the Department of Engineering 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 Contract Amendment will be issued to document the consequences of such action.

6.24. Shop Drawings and Samples:

6.24.1. CONTRACTOR shall submit Shop Drawings to Department of Engineering for review and approval in accordance with the accepted schedule of Shop Drawings and Sample submittals (see paragraph 2.9). All submittals will be identified as Department of Engineering may require. The 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 the materials and equipment CONTRACTOR proposes to provide and to enable Department of Engineering to review the information for the limited purposes required by paragraph 6.26.

6.24.2. CONTRACTOR shall also submit Samples to Department of Engineering for review and approval in accordance with said accepted schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as may be require to enable Department of Engineering to review the submittal for the limited purposes required by paragraph 6.26. The numbers of each Sample to be submitted will be as specified in the Specifications.

Provide units identical with final condition of proposed materials or products for the Work. Include "range" samples (not less than three (3) units) where unavoidable variations must

be expected, and describe or identify variations between units or each set. Provide full set of optional samples where ACUA selection is required. Prepare samples to match ACUA sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and "kind" by ACUA. ACUA will not "test" samples (except as otherwise indicated) for compliance with other requirements, which are therefore the exclusive responsibility of the CONTRACTOR.

6.25. Submittal Procedures:

6.25.1. Before submitting each Shop Drawing or sample, CONTRACTOR shall have determined and verified:

6.25.1.1. All field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto,

6.25.1.2. All materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and

6.25.1.3. All information relative to CONTRACTOR'S sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

6.25.2. Each submittal will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR'S obligations under the Contract Documents with respect to CONTRACTOR'S review and approval of that submittal.

6.25.3. At the time of each submission, CONTRACTOR shall give Department of Engineering specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted for review and approval of each such variation.

6.25.4. When professional certification of performance criteria of materials, systems, or equipment is required by the Contract Documents, the CONTRACTOR shall provide the person or party providing the certification with full information on the relevant performance requirements and on the conditions under which the materials, systems, or equipment will be expected to operate at the project site. The certification shall be based

on performance under the operating conditions at the project site. The Engineer shall be entitled to rely upon the accuracy and completeness of such certifications.

6.26. The Department of Engineering will review and approve Shop Drawings and Samples in accordance with the final schedule of Shop Drawings and Sample submittals as required by paragraph 2.9. 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. Department of Engineering's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means, method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by the Department of Engineering, 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 on previous submittals.

6.27. Department of Engineering's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called attention to each such variation at the time of submission as required by paragraph 6.25.3 and Department of Engineering has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by the Department of Engineering relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.25.1.

6.28. Where a Shop Drawing or Sample is required by the Contract Documents or the final schedule of Shop Drawings and Sample submissions accepted by the Department of Engineering as required by paragraph 2.9, any related Work performed prior to review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

6.28.1. Description of Requirements: The types of submittal requirements specified in this Section include Shop Drawings, Product Data, Samples and miscellaneous work-related submittals. Individual submittal requirements are specified in applicable sections for each unit of work.

6.28.2. Definitions: Work-related submittals of this Section are categorized for convenience as follows:

- Shop Drawings include specially-prepared technical data for this project, including drawings, shop drawing log, diagrams, data sheets, schedules, reports, schematics, calculations, instructions, measurements and similar information not in standard printed form for general application to several projects.

- As-built drawings are contract drawings which show all construction revisions, deviations and alterations from original contract documents. They shall show actual field conditions after construction has been completed.
- Product data includes standard printed information on materials, products and systems not specially prepared for this project other than the designation of selections from among available choices printed therein.
- Samples include both fabricated and unfabricated physical examples of materials, products and units of work; both as complete units and as smaller portions of units of work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.
- Miscellaneous submittals related directly to the work include warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, and similar information, devices and materials applicable to the Work and not processed as shop drawings, product data or samples.

6.28.3. General Submittal Requirements:

6.28.3.1. Coordination and Sequencing: The CONTRACTOR shall coordinate preparation and processing of submittals with performance of the Work so that work will not be delayed by submittals. The CONTRACTOR shall coordinate and sequence different categories of submittals for the same Work, and for interfacing units of work so that one will not be delayed for coordination with another.

6.28.3.2. Preparation of Submittals: The CONTRACTOR shall provide a permanent marking on each submittal to identify project date, CONTRACTOR, Subcontractor, submittal name and specification section and similar information to distinguish it from other submittals. Each submittal item shall have a separate transmittal sheet (no compiling of multiple submittals on one transmittal sheet shall be allowed) and shall bear the CONTRACTOR'S executed review and approval marking and provide space for Department Of Engineering's "Action" marking. Each submittal shall be packaged appropriately for transmittal and handling. Submittals which do not bear CONTRACTOR'S review information and/or submittals which are received from sources other than through CONTRACTOR'S office will be returned stamped "Rejected". Refer to Paragraph "Action on Submittals".

6.28.4. Specific-Category Submittal Requirements: Except as otherwise indicated in individual work sections, CONTRACTOR shall comply with requirements specified herein for each indicated category of submittal. The CONTRACTOR shall provide and process intermediate submittals, where required between initial and final, similar to initial submittals.

6.28.5. A predetermined number of copies shall be submitted within a time period required to prevent delay of the Work. A copy of the transmittal sheet shall be forwarded to ACUA for each submittal.

The CONTRACTOR shall respond to required submittals with complete information and accuracy to achieve required approvals within three (3) submissions. All costs to ACUA involved with subsequent submissions of shop drawings, samples or other items requiring approval, will be back-charged to the CONTRACTOR by deducting such costs from payments due for work completed. In the event an approved item is requested by the CONTRACTOR to be changed or substituted for, all involved costs in the reviewing and approval process will likewise be back-charged to the CONTRACTOR unless judged by the Department of Engineering that the need for such deviation from previously approved data is beyond the control of the CONTRACTOR.

The Department of Engineering will, as soon as possible, return a predetermined amount of copies of the CONTRACTOR marked submittal as outlined in Paragraph 6.28.8. The CONTRACTOR shall then correct the shop drawings to conform to the corrections and changes requested by the Department of Engineering. Following completion of such corrections and changes, the CONTRACTOR shall furnish the Department of Engineering revised copies of the shop drawings conforming to the required corrections and changes for final approval.

6.28.6. Product Data: The CONTRACTOR shall collect required data into one submittal for each unit of work or system; and make each copy to show which choices and options are applicable to project. Include manufacturer's standard print recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements. Maintain one set of product data (for each submittal) at project site, available for reference by ACUA and others.

6.28.7. Tests and Test Reports: Classify such as either "project related" or "product data" depending upon whether report is uniquely prepared for project or a standard publication of workmanship control testing at point of production and process accordingly. All test equipment used shall be verified to be in calibration at the time of each test and test reports shall so indicate. No test shall be made without such verification.

6.28.8. Action on Submittals: Department of Engineering's Action

Where action and return is required or requested, Department of Engineering will review each submittal, mark with "Action". Where submittal must be held for coordination with other contracts, CONTRACTOR will be so advised without delay.

Final Unrestricted Release:

Work may proceed, provided it complies with Contract Documents, when submittal is returned with the following:

Marking: "No Exception Taken"

Restricted Release:

Minor corrections are noted and shall be made. A resubmittal may be required. Work may proceed at CONTRACTOR'S own risk, provided it complies with notations and corrections on submittal and with Contract Documents. Should a required resubmittal not be accepted, CONTRACTOR shall perform all revisions to Work executed to bring work into compliance with final approved shop drawings at no cost to ACUA.

Marking: "Make Corrections Noted"

Returned for Resubmittal:

Do not proceed with Work. Major corrections are noted. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the Work:

Marking: "Revise and Resubmit"

Rejected:

Based on the information submitted, the submission is not in conformance with the Contract Documents. The deviations from the Contract Documents are too numerous to list and a completely revised submission of the proposed equipment or a submission of other equipment is required.

Reproducible transparencies and resultant prints are not legible and will not be reviewed and a resubmittal is required.

Marking: "Rejected"

6.29. Continuing the Work: CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with Department of Engineering. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as CONTRACTOR and Department of Engineering may otherwise agree in writing.

6.30. CONTRACTOR'S General Warranty and Guarantee:

6.30.1. CONTRACTOR warrants and guarantees to Department of Engineering that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR'S warranty and guarantee hereunder excludes defects or damage caused by:

6.30.1.1. Abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors or Suppliers; or

6.30.1.2. Normal wear and tear under normal usage.

6.30.2. 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:

6.30.2.1. Observations by Department of Engineering;

6.30.2.2. Recommendation of any progress or final payment by OWNER;

6.30.2.3. The issuance of a certificate of Substantial Completion or any payment by OWNER to CONTRACTOR under the Contract Documents;

6.30.2.4. Use or occupancy of the Work or any part thereof by OWNER;

6.30.2.5. Any acceptance by OWNER or any failure to do so;

6.30.2.6. Any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability pursuant to paragraph 14.13;

6.30.2.7. Any inspection, test or approval by others; or

6.30.2.8. Any correction of defective Work by OWNER.

6.30.2.9. The liability or refusal of Subcontractors or Suppliers responsible for the defective Work to correct such Work; or

6.30.2.10. Limitations of any Subcontractor's or Supplier's warranty.

6.31. Indemnification: To the fullest extent permitted by law, CONTRACTOR waives any right of contribution against and shall defend, indemnify, and hold harmless OWNER, their agents, consultants and employees from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from or in connection with the performance of the Work, provided that any such claim, damages, loss or expense (these are collectively referred to as "claims") is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable by a party indemnified hereunder. "Claims, damages, losses and expenses" as these words are used in this Agreement shall be construed to include, but not be limited to (1) injury or damage consequent upon the failure of or use or misuse by CONTRACTOR, its Subcontractors, agents, servants or employees, of any hoist, rigging, blocking, scaffolding, or any and all other kinds of items of equipment, whether or not the same be owned, furnished or loaned by OWNER; (2) all attorneys' fees and costs incurred in defense of the claim or in bringing an action to enforce the provision of this Indemnity or any other indemnity contained in the Contract Documents; and (3) all costs, expenses, lost time, opportunity costs, etc. incurred by the party being indemnified or its employees, agents or consultants. In addition, CONTRACTOR shall indemnify and defend the OWNER against all claims made by subcontractors or suppliers for payment under any subcontract or supply contract relating or pertaining to the Work.

6.32. In any and all claims against OWNER or any of their respective consultants, agents, officers, directors or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the defense and indemnification obligation under paragraph 6.31 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 person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.

6.33. The defense and indemnification obligations of CONTRACTOR under paragraph 6.31 shall not extend to the liability of OWNER's Consultants, officers, directors, employees or agents primarily caused by the negligent performance of professional services in respect of the Project by any of them.

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

Field Engineering

6.35. The CONTRACTOR shall establish the exact position, or location of all the work from control points which are shown on the drawings, or furnished by the Department of Engineering after the award of the Contract, or as modified by the Department of Engineering. All the work shall be referenced to center lines which shall be established from control points, re-established where necessary, and maintained throughout the life of the Contract. Any error, or apparent discrepancies found in the drawings, or specifications shall be called to the Department of Engineering's attention for interpretation prior to proceeding with the work.

6.35.1 All property lines and survey monuments which may be disturbed during construction shall be properly tied into fixed points before being disturbed, and properly reset by the CONTRACTOR upon completion of the work by a N.J. licensed land surveyor.

6.35.2 The CONTRACTOR shall furnish certification from an ACUA Department of Engineering approved surveyor, licensed in the State of New Jersey, who shall verify that all portions of the work are provided at the locations and elevations shown on the Contract Drawings.

6.35.3 Field survey information shall be completed on standard "E" size (24" x 36") electronic AutoCad reproducible drawing unless otherwise specified by the Department of Engineering.

6.35.4 All field survey information shall reference the New Jersey Planer Coordinate System and the National Geodetic Vertical Datum (NGVD).

Temporary Facilities

6.36 Work covered in this Section shall consist of furnishing the labor, materials, tools, equipment, incidentals, and services necessary to construct facilities and temporary controls as indicated on and in the Drawings and Specifications, including, but not necessarily limited to, the following:

6.36.1. Temporary Utilities: The CONTRACTOR shall furnish, install, and maintain a temporary light and power system to facilitate the safe, prompt, and efficient performance of the construction work at all times. The CONTRACTOR, at his own expense, shall pay all costs for installing, maintaining, and removing the temporary service. When approved or directed by the Department of Engineering, the CONTRACTOR shall remove the temporary system and all materials, equipment, etc., pertinent to the system shall become the property of the CONTRACTOR and shall be removed from the site, all at the CONTRACTOR'S expense.

6.36.2. Temporary General Lighting System:

The CONTRACTOR shall furnish, install, and maintain a temporary general lighting system which conforms to the applicable Federal and State codes and meets the approval

of the Department of Engineering. Temporary general lighting system shall be provided at the Department of Engineering's and CONTRACTOR'S field offices.

The temporary general lighting system shall provide lighting for access to and egress from the work.

The temporary general lighting system shall consist of electrical power, wiring, switches, necessary insulated supports, poles, fixtures, receptacles, 100-watt lamps, guards, cutouts and fuses as required.

The CONTRACTOR shall furnish lamps and fuses for the temporary general lighting system and shall replace broken and burned-out lamps and blown fuses for the system.

The CONTRACTOR shall maintain the temporary general lighting system in safe working order.

The CONTRACTOR shall install the receptacles in such a manner as to reach any point in the work area with an extension cord not to exceed 40 feet in length.

The temporary general lighting system shall not be used for power purposes.

Hand tools, such as drills, hammers, and grinders, may be connected to the temporary general lighting system provided that they are suitable for 120 Volt, single phase, 60 Hertz operation and have a power requirement not exceeding 1,500 Volt Amperes, shall be connected to receptacle outlets of the system with only one unit connected to a single outlet, and shall not be connected to lighting outlets. Cords of tools shall not exceed forty (40) feet in length.

The CONTRACTOR will not be permitted to proceed with any portion of his work which, in the opinion of the Department of Engineering, is not adequately illuminated.

The CONTRACTOR shall remove temporary general lighting system upon completion of the Contract.

6.36.3. Temporary Water:

The CONTRACTOR shall furnish all water required during his operations to complete the work under this Contract.

The CONTRACTOR, at the commencement of the work, shall make the necessary arrangements to provide temporary water supply at the site during construction operations. The water supply shall be for the use of all trades employed at the site and shall be available at various locations within the site. All water for drinking purposes shall be potable and shall be conveyed in sanitary tanks or receptacles. Water for construction purposes shall

be free from oil, acid, alkali, vegetable matter, organic matter or other deleterious substances.

The CONTRACTOR, at his own expense, shall pay all costs of the temporary water system including water obtained from off-site sources.

6.36.4. Temporary Sanitary Facilities: The CONTRACTOR shall provide and maintain chemical toilets on the site of adequate number and size for use by all personnel. Facilities shall be maintained in strict conformity with the law and shall be kept in a clean and sanitary condition by the CONTRACTOR.

6.36.5. Temporary First Aid Facilities:

The CONTRACTOR shall take every precaution for the safety of his employees. He shall provide such equipment and facilities as are necessary or required, in case of accident, for first aid service to any who may be injured in the progress of the work, and he shall have standing arrangements for the removal, transport and hospital treatment of any employees who may be injured or who may become ill.

The CONTRACTOR must report immediately to the Department of Engineering every accident to persons or damage to property, and shall furnish in writing full information, including testimony of witnesses, regarding any and all accidents.

The CONTRACTOR shall complete and prominently display a site safety plan which, at a minimum includes:

Telephone numbers and locations of the following:

- Nearest hospital and emergency room
- Poison Control Center
- Police (both State and local)
- Fire Department
- Emergency Medical Service
- Airport
- Explosives Unit
- CONTRACTOR'S Supervisory and Management personnel (work and home)
- NJDEP Department of Solid Waste Representative

The CONTRACTOR shall also include a listing of emergency routes to the nearest hospital and emergency room.

At the commencement of work, the CONTRACTOR shall inform all parties of his activities, including number of employees, and anticipated duration of work.

The CONTRACTOR shall obtain and keep on file Material Safety Data Sheets (MSDS) for all products used on site.

6.36.6. Temporary Fire Protection: The CONTRACTOR shall supply and maintain the portable fire extinguishing equipment necessary to properly ensure the safety and well-being of persons affected by his operation. Portable fire extinguishing equipment shall conform to OSHA regulations.

6.36.7. Barriers: The CONTRACTOR shall barricade open excavations and provide warning lights from dusk to dawn each day. The CONTRACTOR shall fence off and secure the perimeter of work areas as instructed by the Department of Engineering. Fences and barricades shall be constructed so as to impede or prevent foreign parties from entering the work area. At the conclusion of each work day, the CONTRACTOR shall review the entire site to ensure all barriers are intact and operational. It shall be the CONTRACTOR'S responsibility to maintain all barricades.

6.36.8. Field Offices and Sheds:

The CONTRACTOR shall provide, at his own expense, field offices, trailers, and sheds as deemed necessary by the Department of Engineering in order to properly store and shield construction machinery and materials from harmful elements.

Field offices, trailers, and sheds shall be located in areas approved by the Department of Engineering.

Field office, trailer, and shed areas shall be maintained and kept hazard free by the CONTRACTOR.

Field office, trailers, and sheds shall be removed by the CONTRACTOR at his own expense upon completion of the work or as order by the Department of Engineering.

Project Closeout

6.37 Record Document Submittals: Do not use Record Documents for construction purposes; protect from loss in a secure location; provide access to Record Documents for the Department of Engineering's reference.

CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Contract Amendments, Work Change Directives, Field Orders and written interpretations and clarifications in good order and annotated to show all changes made during construction. These Record Documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Department of Engineering

for reference. Upon completion of the Work, these Record Documents, Samples and Shop Drawings will be delivered to the Department of Engineering.

6.37.1. Record Drawings: Before any work is commenced, the CONTRACTOR shall obtain, from the Department of Engineering, a complete set of electronic reproducibles of the Contract Drawings. As the work progresses, the CONTRACTOR shall keep a record of all work completed, and on a predetermined day of each week agreed upon by the Department of Engineering and CONTRACTOR have them neatly and correctly entered in colored pencil on paper print of the Contract Drawings affected and have the prints kept available at the site for inspection. On the last day of each month, the record for four (or five as appropriate) previous weeks, properly identified by notes, shall be transferred legibly to reproducibles. Within seven (7) days after the end of each bimonthly period, the CONTRACTOR shall submit to the Department of Engineering an electronic print of each drawing showing latest corrections.

All details on drawings must also be corrected for changes and/or modifications.

Upon completion of all work, and prior to requesting a Substantial Completion Inspection by the Department of Engineering, CONTRACTOR shall complete all electronic reproducibles and sign them indicating that the work was installed as shown. One set of electronic prints shall be submitted to the Department of Engineering for review and acceptance. Upon receipt of the Department of Engineering acceptance, the CONTRACTOR shall submit one (1) set of electronic reproducibles indicating "Record Drawings of Work As-Built", certified by the CONTRACTOR.

The submittal of Record Drawings acceptable to the Department of Engineering as specified herein, shall be condition precedent to payments to the CONTRACTOR that may otherwise be then due.

Shop drawings will not be deemed acceptable as "Record Drawings".

Maintain a clean, undamaged set of black line white-prints of Contract Drawings and Shop Drawings. Mark-up these drawings to show the actual installation. Mark whichever drawing is most capable of showing conditions accurately. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover.

The CONTRACTOR shall maintain at the job site, one copy of:

- Drawings.
- Specifications.
- Addenda.

Reviewed Shop Drawings.
Contract Amendments.
Other Modifications to Contract.
Field Test Records.
All Pertinent Correspondence.
Drawings Reflecting "As-Built" Conditions.

Store Documents in field office supplied by CONTRACTOR, apart from documents used for construction.

Provide files and racks for storage of documents.

File documents in accordance with Project Filing Format of Uniform Construction Index.

Maintain documents in clean, dry, legible condition.

Do not use record documents for construction purposes.

Make documents available at all times for inspection by the Department of Engineering.

6.37.2. Record Specifications: Maintain one copy of the Specification, including addenda. Mark to show variations in actual Work performed in comparison with the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot be readily discerned later by direct observation. Note related record drawing information and Product Data.

Upon completion of the Work, submit Record Specifications to the Department of Engineering for its records.

6.37.3 Maintenance Manuals: Provide four (4) complete sets. Organize maintenance data into sets of manageable size. Bind in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Electronic versions are acceptable in lieu of a bound copy. Mark identification on front and spine of each binder. Include the following information:

Emergency instructions.
Name and address of suppliers.
Spare part list.
Copies of warranties.
Schematics of all circuitry including circuit boards.
Inspection procedures.
Shop Drawings and Product Data.

6.37.4. Requirements to Apply For Closeout:

All required tests shall have been performed and documented by submittals to the Department of Engineering and all required repairs shall have been completed.

All required submittals shall have been made and accepted. All requested resubmittals shall have been completed and accepted.

CONTRACTOR shall have completed removal of temporary facilities, controls, and structures, and all damaged areas restored. Final clean-up shall have been completed to the satisfaction of the Department of Engineering.

A final inspection shall be made by the CONTRACTOR and the Department of Engineering. Any corrective action required as a result of this inspection shall have been completed and accepted by the Department of Engineering.

All requirements of the General Conditions and the Supplementary Conditions, if attached, have been complied with.

The prime CONTRACTOR shall submit verification (Release of Liens) that all Subcontractors and material suppliers have been paid.

The complete file of Construction Photographs shall have been delivered to the Department of Engineering.

All warranties or guarantee's covering materials, equipment systems or workmanship that have been provided by Manufacturers or suppliers shall have been delivered to the Department of Engineering.

6.37.5. Photographs:

The CONTRACTOR shall furnish electronic color photos of the Construction Areas and all environmentally acceptable stockpile or storage sites that he intends to use during construction. The photos shall be taken prior to stockpiling, storage or construction on the areas and shall serve as a permanent record of existing conditions prior to use and construction. The suitability of these photos to depict past conditions shall be determined by the Department of Engineering. The CONTRACTOR shall present these photos to the Department of Engineering prior to the Pre-Construction Conference. The costs incurred by the CONTRACTOR for these photos shall be included in the prices in the bid Proposal.

During the progress of the work, the CONTRACTOR shall take a minimum of ten (10) color photographs per week of the construction with photographs encompassing the term of the project. Electronic photos shall be submitted to the Department of Engineering. The Department of Engineering will direct the photographer as to what views shall be taken.

Photos shall be labelled and dated directly below photograph face.

One (1) complete set of photographs shall be provided in electronic format to the Department of Engineering.

Photographs shall be submitted with a photographic log containing the following information:

- name of job;
- photographic print number and roll number;
- date of photography;
- location of photography;
- photograph perspective; and,
- description of photograph.

ARTICLE 7--OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, or let other direct contracts therefor which shall contain General Conditions similar to these, or have other work performed by utility owners.

7.2. CONTRACTOR shall afford each other CONTRACTOR who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of the OWNER and the others whose work will be affected.

7.3. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to Department of Engineering 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 report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work.

Coordination of Other Work:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, OWNER shall advise CONTRACTOR of the following:

7.4.1. The person, firm or corporation who will have authority and responsibility for coordination of the activities among the various prime CONTRACTORS will be identified;

7.4.2. The specific matters to be covered by such authority and responsibility will be itemized; and

7.4.3. The extent of such authority and responsibilities will be provided.

7.4.4. The program to implement to its facilities, the OWNER may from time to time, award contracts for additional work at the facility covered by this Contract. The CONTRACTOR MAY NOT effect any ACUA operations at any time. Traffic must be coordinated as not to interfere with normal operations of the overall facility.

7.4.5. The CONTRACTOR will not have exclusive occupancy of the contract site. In his operations for work under this contract, he shall cooperate with and coordinate his operations with those of other CONTRACTORS, trades and work forces.

7.4.6. The CONTRACTOR agrees that he will have no claim against the OWNER because of any increased costs due to delays or extra expense entailed by reason of the above requirements.

Unless otherwise provided in the Contract Documents, OWNER shall have sole authority and responsibility in respect of such coordination.

Coordination of Work by CONTRACTOR:

7.5. Coordination: CONTRACTOR shall:

Coordinate activities included in various Sections to assure efficient and orderly installation of each component. Coordinate operations included under different Sections that are dependent on each other for proper installation and operation.

Where installation of one component depends on installation of other components before or after its own installation, schedule activities in the sequence required to obtain the best results.

Where space is limited, coordinate installation of different components to assure maximum accessibility for maintenance, service and repair.

Make provisions to accommodate items scheduled for later installation by OWNER.

Prepare memoranda for distribution to each party involved outlining required coordination procedures. Include required notices, reports, and attendance at meetings.

Prepare similar memoranda for the Department of Engineering and separate CONTRACTORS where coordination of their Work is required.

7.5.1. Administrative Procedures: Coordinate scheduling and timing of administrative procedures with other activities to avoid conflicts and ensure orderly progress. Such activities include:

- Preparation of schedules.
- Installation and removal of temporary facilities.
- Delivery and processing of submittals.
- Progress meetings.
- Project closeout activities.
- Utility installation.

7.5.2. Coordination Drawings: Prepare Coordination Drawings where close coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space necessitates maximum utilization of space for efficient installation of different components.

Show relationship of components shown on separate Shop Drawings.

Indicate required installation sequences.

7.5.3. Staff Names: At or before the Preconstruction Conference, CONTRACTOR shall submit a list of CONTRACTOR'S staff assignments, including Superintendent and personnel at the site; identify individuals, their duties and responsibilities, addresses and telephone numbers (both day and evening).

Post copies in the Project meeting room, the field office, and at each temporary telephone.

7.5.4. Inspection of Conditions: The Installer of each component shall inspect the substrate and conditions under which Work is performed, Do not proceed until unsatisfactory conditions have been corrected.

7.5.5. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations.

7.5.6. Inspect material immediately upon delivery and again prior to installation. Reject damaged and defective items.

7.5.7. Recheck measurements and dimensions, before starting installation.

7.5.8. Install each component during weather conditions and project status that will ensure the best results. Isolate each part from incompatible material as necessary to prevent deterioration.

7.5.9. Coordinate temporary enclosures with inspections and tests, to minimize uncovering completed construction for that purpose.

7.5.10. Cleaning and Protection: During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

Clean and maintain completed construction as often as necessary through the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

7.5.11. Limiting Exposures: Supervise operations to ensure that no part of construction, completed or in progress, is subject to harmful or deleterious exposure. Such exposures include but not limited to:

- Excessive static or dynamic loading.
- Excessive internal or external pressures.
- Excessive weathering.

ARTICLE 8--OWNER'S RESPONSIBILITIES

8.1. Except as otherwise provided in these General Conditions, Department of Engineering shall issue all communications to CONTRACTOR.

8.2. Deleted.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements are set forth in paragraphs 4.1. Paragraph 4.2 refers to Department of Engineering's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and drawings of physical conditions in existing structures at or contiguous to the site that have been utilized in preparing the Contract Documents.

8.5. Deleted.

8.6. Review of Contract Amendments as indicated in paragraph 10.4.

8.7. Department of Engineering's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

8.9. The Department of Engineering and ENGINEER 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 furnishing or performance of the Work. OWNER, ENGINEER, and ENGINEERs Consultant will not be responsible for CONTRACTORs failure to perform or furnish the Work in accordance with the Contract Documents.

8.9.1 CONTRACTOR agrees that notwithstanding anything to the contrary that may be contained in or inferred from the Contract Documents OWNER, ENGINEER, and ENGINEERs Consultant have no duty of any kind with respect to advice, inspection or supervision with respect to workplace safety means and methods, or any duty to supervise, monitor, report, correct, stop all or any part of the Work, or take or refrain from taking any action as a result of any safety violation(whether or not same is known to OWNER, ENGINEER, or ENGINEERs Consultant) that may exist with respect to the Work and that the sole responsibility for all workplace safety-related matters rests with CONTRACTOR.

8.9.2 CONTRACTOR further specifically agrees that to the maximum extent allowed by the law and public policy of the State of New Jersey, all indemnification and hold-harmless provisions contained in the Contract Documents shall extend to and shall cover any claim made by any person or entity against OWNER, ENGINEER, or ENGINEERs Consultant (except for claims made by direct employees of OWNER, ENGINEER, or ENGINEERs Consultant against their direct employer) which arises from or in any way relates to any injury to any person who is engaged in or in any way participating or assisting in the performance of the Work, unless the proximate cause of the injury was the sole negligence of OWNER, ENGINEER, or ENGINEERs Consultant.

8.10. OWNER'S responsibility in respect of undisclosed Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Materials uncovered or revealed at the site is set forth in paragraph 4.5.

ARTICLE 9--STATUS DURING CONSTRUCTION

OWNER's Representative:

9.1. The Department of Engineering will be OWNER's representative during the construction period.

Visits to Site:

9.2. The OWNER will make visits to the site at intervals appropriate to the various stages of construction as is deemed necessary in order to observe 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, The Department of Engineering will determine, in general, if the Work is proceeding in accordance with the Contract Documents. During on-site visits or observations of CONTRACTOR's work the Department of Engineering 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 furnishing or performance of the Work.

9.3. Deleted.

9.4. Department of Engineering will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as may be determined necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. Such written clarifications and interpretations will be binding on CONTRACTOR. If Department of Engineering or CONTRACTOR believes that a written clarification or interpretation justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree to the amount or extent thereof, if any, OWNER or CONTRACTOR may make a written claim therefore as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. The Department of Engineering may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR who shall perform the Work involved promptly.

Rejecting Defective Work:

9.6. Department of Engineering will have authority to disapprove or reject Work believed to be defective, or will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Department of Engineering will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed. However, Department of Engineering's failure to reject any defective Work nor wrongful rejection of non-defective Work shall give rise to any duty or responsibility on the part of the Department of Engineering to CONTRACTOR, any Subcontractor, any Supplier, any of their agents or employees or any other person performing any of the Work.

Shop Drawings, Contract Amendments and Payments:

9.7. In connection with Department of Engineering's authority as to Shop Drawings and Samples, see paragraphs 6.24 through 6.28 inclusive.

9.8. In connection with Department of Engineering's authority as to Contract Amendments, see Articles 10, 11, and 12.

9.9. In connection with Department of Engineering's authority as to Applications for Payment, see Article 14.

Determinations for Unit Prices:

9.10. The Department of Engineering will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. The Department of Engineering will review with CONTRACTOR the preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). OWNER'S written decision thereon will be final and binding upon OWNER and CONTRACTOR, unless a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to the decision, unless otherwise agreed in writing by OWNER and CONTRACTOR. Such appeal will not be subject to the procedures of paragraph 9.11.

Decisions on Disputes:

9.11. The Department of Engineering will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and Claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Times will be referred initially to The Department of Engineering in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant to The Department of Engineering (no later than thirty days) after the

start of the occurrence or event. The Department of Engineering will render a formal decision in writing within thirty days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. The Department of Engineering's written decision on such claim, dispute or other matter will be final and binding.

9.12. The rendering of a decision by the Department of Engineering pursuant to paragraphs 9.10 or 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter pursuant to Article 16.

9.13. Procedures

9.13.1. The Department of Engineering will not 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 furnishing or performance of the Work. The Department of Engineering will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with Contract Documents.

9.13.2. The OWNER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9.13.3. The Department of Engineering's review of the Final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals and other documentation required to be delivered by paragraph 14.12 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.

9.13.4. The limitations upon responsibility set forth in this paragraph 9.13 shall also apply to OWNER'S agents and employees.

9.14 Nothing contained in the Contract Documents shall create any contractual relationship between OWNER, its consultant(s) and any Subcontractor, Sub-Subcontractor or Supplier.

ARTICLE 10--CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, Department of Engineering may, at any time or from time to time, order additions, deletions or revisions in the Work. Such additions, deletions or revisions will be authorized by a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If Department of Engineering and CONTRACTOR are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Times that should be allowed as a result of a Work Change Directive, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. 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 and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.23 or in the case of uncovering work as provided in paragraph 13.9.

10.4. Department of Engineering and CONTRACTOR shall execute appropriate Contract Amendment covering:

10.4.1. Changes in the Work which are (i) ordered by Department of Engineering pursuant to paragraph 10.1, (ii) required because of acceptance of defective Work under paragraph 13.13 or correcting defective Work under paragraph 13.14, or (iii) agreed to by the parties; and

10.4.2. Changes in the Contract Price or Contract Times which are agreed to by the parties.

10.5. If notice 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) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

10.6 All Contract Amendments shall be signed by a responsible officer or employee of the CONTRACTOR with the authority to legally bind CONTRACTOR. By the signature of any Contract Amendment, the CONTRACTOR waives and releases the OWNER, its employees, agents, consultants, and CONTRACTORS from any liability of any kind with respect to any claims that were known (or in the exercise of due diligence should have been known) to the CONTRACTOR at the time of the Contract Amendment and which are not specifically reserved by the CONTRACTOR in writing as an addendum to the Contract Amendment, it being the intent of this Paragraph that each Contract Amendment serve as a resolution of all claims by the CONTRACTOR except for those which are specifically reserved and that the CONTRACTOR's reserved claims be fully set forth. All reserved claims shall state at a minimum the following: the nature of the claim, the date or dates on which the events giving rise to the claim occurred, and the approximate amount of the claim.

10.7 No Contract Amendment shall be valid until same is approved by formal and effective resolution of the governing body of the OWNER.

ARTICLE 11--CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at CONTRACTOR's expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Contract Amendment. Any claim by CONTRACTOR for an adjustment in the Contract Price shall be based on **written notice delivered by CONTRACTOR promptly (but in no event later than seven days] after the start of the occurrence or event giving rise to the claim and stating the general nature of the claim. CONTRACTOR shall provide complete supporting data with respect to the claim, including all claims for equitable adjustment, not later than thirty (30) days after the start of such occurrence.** All claims for adjustment in the Contract Price shall be determined by the Department of Engineering in accordance with paragraph 9.11 if Department of Engineering and CONTRACTOR cannot otherwise agree on the amount involved. **No claim of any kind for an adjustment in the Contract Price will be valid if it is not submitted in accordance with this procedure, and CONTRACTOR waives all rights to recovery for any claim as to which this procedure is not followed.**

11.3. The value of any Work covered by a Contract Amendment or of any claim for an adjustment in the Contract Price will be determined by whichever of the following methods is most advantageous for OWNER:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1 through 11.9.3, inclusive);

11.3.2. Where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2.1);

11.3.3. Where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 11.3.2, on the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's Fee for overhead and profit (determined as provided in paragraph 11.6).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work.

Except as otherwise may be agreed to in writing by Department of Engineering, such costs shall be in amounts no higher than those prevailing in Atlantic County, New Jersey; shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by Department of Engineering and CONTRACTOR. Such employees shall include without limitation superintendents, foremen and other personnel employed full-time at the site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above but only to the extent such work is specifically and in writing, authorized by Department of Engineering.

11.4.2. 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 including such services as shall be necessary to make any equipment operational on site. 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.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed or furnished by Subcontractors. If required by Department of Engineering, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to Department of Engineering and CONTRACTOR and shall deliver such bids to Department of Engineering who will then determine, which bids, if any, will be accepted. 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 paragraphs 11.4, 11.5, 11.6 and 11.7. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, and surveyors) employed for services directly and specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. 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.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by Department of Engineering and the costs of transportation, loading, unloading, installation, dismantling and removal thereof--all 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.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations, with the exception of those from which OWNER is exempt under Laws and Regulations.

11.4.5.5. 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 pavements and fees for permits and licenses.

11.4.5.6. 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 and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they 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 Department of Engineering. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of Contract Amendments.

11.5. The term Cost of the Work shall ***not*** include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4--all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. 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.

11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

11.6. The CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. A mutually acceptable fixed fee; or

11.6.2. 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:

11.6.2.1. For costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's fee shall be fifteen percent;

11.6.2.2. For costs incurred under paragraph 11.4.3, the CONTRACTOR's fee shall be five percent;

11.6.2.3. No fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.4. 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

11.6.2.5. 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 11.6.2.1 through 11.6.2.4, inclusive.

11.7. Whenever the cost of any Work is to be determined pursuant to paragraph 11.4 and 11.5, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit an itemized cost breakdown together with supporting data. CONTRACTOR will submit on a daily basis, reports listing the manpower, equipment and number of hours devoted to the Contract Amendment Work from the preceding day.

Cash Allowances:

An allowance for uniformed law enforcement officers shall not be required on this project.

11.8. 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 furnished and performed for such sums as may be acceptable to Department of Engineering. CONTRACTOR agrees that:

11.8.1. The 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

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payments on account of any of the foregoing will be valid.

Prior to final payment, an appropriate Contract Amendment will be issued as recommended by the Department of Engineering to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.9. Unit Price Work:

11.9.1. 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 established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by the Department of Engineering in accordance with paragraph 9.10.

11.9.2. 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.

11.9.3. Department of Engineering or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11 if:

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

11.9.3.2. There is no corresponding adjustment with respect to any other item of Work; and

11.9.3.3. If CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or Department of Engineering 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.

A unit price is an amount proposed by a Bidder and stated in the Proposal as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by a Contract Amendment if estimated quantities of required Work are increased or decreased. The quantities of work estimated as a part of the Specifications are for informational purposes only. Contract Amendments will be based upon deviations from the quantities of work set forth in the

Schedule of Values arrived at pursuant to Section 14.1 and subsequent sections of the General Conditions.

Unit prices include necessary material, installation, overhead, profit and any applicable taxes.

The methods of measurement and payment for unit prices are as set forth in the Contract Documents.

Department of Engineering reserves the right to reject the CONTRACTOR'S measurement of Work-in-place that involved use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Department of Engineering at the CONTRACTOR'S expense.

ARTICLE 12--CHANGE OF CONTRACT TIMES

12.1. The Contract Time (or Milestones) may only be changed by a Contract Amendment. Any claim for an adjustment of the Contract Times (or Milestones) shall be based on written notice delivered by the party making the claim to the other party promptly (but in no event later than seven days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within thirty (30) days after such occurrence and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Times (or Milestones) shall be determined by the Department of Engineering. No claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this procedure.

12.2. All time limits stated in the Contract Documents are of the essence of the Agreement.

12.3. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a proper claim is made therefor. Delays beyond the control of CONTRACTOR shall include, but not be limited to acts or neglect of utility owners or other CONTRACTORS performing other work as contemplated by Article 7, fires, epidemics, abnormal weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR. The Contract Times may be extended in the event of work stoppages on the part of Subcontractors or Suppliers only upon CONTRACTOR's satisfying Department of Engineering that CONTRACTOR is unable to obtain substitute goods or services timely and at a reasonable price.

12.4. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. In no event shall OWNER be liable to CONTRACTOR for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, (ii) delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners or other CONTRACTOR's performing other work as contemplated by Article 7, (iii) delays under circumstances where the CONTRACTOR is prevented by inclement weather or conditions resulting immediately therefrom which are adverse to the current controlling operation or operations, as determined by the Engineer, from proceeding with at least 75 percent of the normal labor and equipment force engaged on such operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations. Should the CONTRACTOR prepare to begin work at the regular starting time in the morning of any day on which inclement weather, or the conditions resulting from the weather, prevent the work from beginning at the usual starting time, and the crew is dismissed as

a result thereof, and the CONTRACTOR does not proceed with at least 75 percent of the normal labor and equipment force engaged in the current controlling operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations, the day will not be counted for purposes of the Contract Time regardless of whether conditions change thereafter during said day and the major portion of the day could have been considered suitable for such construction operations.

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

13.1. Notice of Defects: Prompt notice of all defective Work of which Department of Engineering has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected or accepted as provided in this Article 13.

13.2. Access to Work: OWNER, personnel of OWNER, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

Tests and Inspections:

QUALITY CONTROL PROGRAM

13.3. CONTRACTOR shall establish and maintain an effective Quality Control Program. The quality of all work shall be the responsibility of CONTRACTOR. Sufficient inspections and testing of all Work, including that of Subcontractors, to ensure conformance with the Contract Documents and Laws and Regulations with respect to the quality of materials, workmanship, construction, functional performance and identification shall be performed on a continuing basis. CONTRACTOR shall furnish qualified personnel, appropriate facilities, instruments and testing devices necessary for the performance of the quality control function.

13.4. Prior to the start of construction, CONTRACTOR shall submit a Quality Control Plan for the approval of the Department of Engineering. CONTRACTOR'S proposed written Quality Control Plan shall include at a minimum:

- 13.4.1 Names, number and qualification of personnel to be used for this purpose.
- 13.4.2 Authority and responsibility of all Quality Control personnel.
- 13.4.3 A list of tests specified to be performed with proposed test methods including names of technicians or qualified testing laboratories to be used.
- 13.4.4 Location and availability of test facilities and equipment.
- 13.4.5 Procedures for advance notice and coordination of special inspections and tests where required.
- 13.4.6 Responsibilities and procedures for correcting deficiencies.
- 13.4.7 Method of documenting and tracking deficiencies and corrective actions.

13.5. CONTRACTOR'S Quality Control Program shall assure compliance with all sections of the Contract Documents and all applicable Laws and Regulations. CONTRACTOR shall furnish reports of all inspections and daily job progress to Department of Engineering, and shall in a timely manner distribute copies of all inspection reports, certificates of inspection, testing results directly to Department of Engineering. CONTRACTOR shall give Department of Engineering timely notice of all tests and inspections, so that Department of Engineering may observe such inspections, testing or approval. Neither observations by the Department of Engineering, nor inspections, tests or approvals by others shall relieve CONTRACTOR of its obligations to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be responsible for and bear all costs of such inspections, tests, or approval required by the Contract Documents or any public authority, except as specifically provided to the contrary in the Contract Documents. OWNER shall bear all costs of inspections, tests or approvals not required by the Contract Documents, but which are requested by Department of Engineering provided, however, if any such inspection or testing reveals a failure of the Work to comply with requirements with the Contract Documents of any Laws and Regulations, or CONTRACTOR shall bear all costs thereof and the costs of any re-testing of corrected Work regardless of whether or not CONTRACTOR was responsible for payment of the initial test costs.

13.6. Required certificates of inspection, testing or approval shall be secured by CONTRACTOR and promptly delivered to the Department of Engineering.

13.7. All tests made by CONTRACTOR shall be performed by CONTRACTOR or an independent testing agency, as provided in the Quality Control Plan, and shall be in accordance with the reasonable current standards of engineering practice. Department of Engineering shall be furnished with two copies of test procedures used and two copies of all test reports made with respect to the Work. All corrected Work shall be re-tested. Department of Engineering shall be under no obligation to accept any equipment or other Work which does not pass the prescribed tests.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of Department of Engineering, it must, if requested, be uncovered for observation, inspection and testing and replaced at CONTRACTOR's sole expense and the provisions of Article 13.9 shall not be applicable.

13.9. If Department of Engineering considers it necessary or advisable that covered Work be observed or inspected or tested by others, CONTRACTOR, at Department of Engineering's request, shall uncover, expose or otherwise make available for observation, inspection or testing as may be required, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all costs and damages caused by or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction, (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals, all court or arbitration or other dispute resolution costs, and all costs of repair or replacement of work of others); and OWNER

shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11.

13.10. Department of Engineering May Stop the Work: If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, Department of Engineering may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Department of Engineering to stop the Work shall not give rise to any duty on the part of Department of Engineering to exercise this right for the benefit of CONTRACTOR or any other party.

13.11. Correction or Removal of Defective Work: If required by Department of Engineering, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected, remove it from the site and replace it with Work that is not defective. Neither the final certificate, nor payment, nor any provisions in the Contract Documents shall relieve CONTRACTOR of its responsibility for faulty materials, equipment or workmanship and, unless otherwise specified, CONTRACTOR shall remedy or cause the necessary Subcontractor or Supplier to remedy all defective Work.

All notices with respect to defective Work shall be issued by the Department of Engineering. CONTRACTOR shall pay all costs and damages caused by or resulting from such correction or removal (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals, all court or arbitration or other dispute resolution costs, and all costs of repair or replacement of work of others).

13.12. Warranties:

13.12.1. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or 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, CONTRACTOR shall promptly, without cost to OWNER and in accordance with Department of Engineering's written instructions, (i) correct such defective Work, or, if it has been rejected by Department of Engineering, remove it from the site and replace it with Work that is not defective, and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Department of Engineering may have the defective Work corrected or the rejected Work removed and replaced, and all costs and damages caused by or resulting from such removal and replacement (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals, all court or arbitration or other dispute resolution costs, and all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

13.12.2. 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 or by Field Order.

13.12.3. Where defective Work (and damage to other Work resulting therefrom) has been corrected, removed or replaced under this paragraph 13.12, the correction period hereunder with respect to such Work will begin when such correction or removal and replacement has been satisfactorily completed.

13.13. Acceptance of Defective Work: The Department of Engineering, instead of requiring correction or removal and replacement of defective Work, may accept same at its sole option. In that event, CONTRACTOR shall pay all costs attributable to Department of Engineering's evaluation of and determination to accept such defective Work (such costs to be reasonable and to include but not be limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs). If any such acceptance occurs a Contract Amendment will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11.

13.14. OWNER May Correct Defective Work: If CONTRACTOR fails after written notice from Department of Engineering to correct defective Work or to remove and replace rejected Work as required in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the corrective work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, Department of Engineering may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph Department of Engineering shall proceed expeditiously. In connection with such corrective and remedial action, Department of Engineering may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere.

CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors access to the site to enable OWNER to exercise the rights and remedies under this paragraph. All costs and damages incurred or sustained by OWNER in exercising such rights and remedies will be charged against CONTRACTOR and a Contract Amendment will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Department of Engineering may make a claim therefore as provided in Article 11. Such costs and damages will include but not be limited

to all fees and charges of engineers, architects, attorneys and other professionals, all court or arbitration or other dispute resolution costs and all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's defective Work. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by Department of Engineering of OWNER's rights and remedies hereunder.

ARTICLE 14--PAYMENTS TO CONTRACTOR AND COMPLETION

14.1. Schedule of Values: The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to the Department of Engineering. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.2. Application for Progress Payment: At least twenty (20) days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to Department of Engineering 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 approved in writing by the Department of Engineering, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that the CONTRACTOR holds the materials and equipment free and clear of all Liens and by evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to Department of Engineering. The amount of retainage with respect to progress payments will be as stipulated herein or, if no such stipulation is made, in the maximum amount allowed by New Jersey law (unless otherwise provided, two percent of all monies earned up to 100% of the contract amount). A "CONTRACTOR's Certification" shall be submitted with each payment request in sufficient form for the Department of Engineering to determine CONTRACTOR's right to payment and compliance with any applicable mechanic's lien law. Each payment request shall include properly executed waivers of lien in conformity with information set forth on a properly completed CONTRACTOR's Certification. In the event that the Department of Engineering is satisfied with CONTRACTOR's payment procedures, the Department of Engineering may accept partial waivers of lien of Subcontractors and Suppliers who were included in the immediate preceding payment. The CONTRACTOR shall submit waivers on a current basis, but the Department of Engineering may allow Subcontractors and Suppliers to be not more than one payment late with their partial waivers.

An appropriate reduction in retained monies shall be made for any portions of the Work accepted and utilized by the OWNER prior to the completion of all work under the contract.

14.3. CONTRACTOR's Warranty of Title: CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Department of Engineering free and clear of all Liens at the time payment is made.

Review of Applications for Progress Payment:

14.4. The Department of Engineering will, within ten (10) days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to the Owner's Board for approval, or return the Application to CONTRACTOR indicating in writing reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

14.5. By recommending any payment, the Department of Engineering will not be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to the Department of Engineering in the Contract Documents or that there may not be other matters or issues between the parties that might entitle OWNER to withhold payment from CONTRACTOR.

14.6. Department of Engineering's recommendation of any payment, including final payment, shall not mean that Department of Engineering is 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 furnishing or performance of Work, or for any failure of CONTRACTOR to perform or furnish Work in accordance with the Contract Documents.

14.7. Department of Engineering may refuse to recommend the whole or any part of any payment because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary to protect OWNER from loss because:

14.7.1. The Work is defective, or completed Work has been damaged requiring correction or replacement,

14.7.2. The Contract Price has been reduced by Written Amendment or Contract Amendment,

14.7.3. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.14, or

14.7.4. Department of Engineering has actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.4 inclusive.

OWNER may refuse to make payment of the full amount recommended because:

14.7.5. Claims (including information that leads the OWNER to believe that a lien is likely to be filed) have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work,

14.7.6. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a Bond satisfactory to Department of Engineering and pursuant to N.J.S.A. 2A:44-130 to secure the satisfaction and discharge of such Liens. The OWNER shall have no obligation to serve notice as permitted by N.J.S.A. 2A:44-135 or to make payment pursuant to N.J.S.A. 2A:44-136, but may withhold payment based on the filing of any Lien without attempting to adjudicate the validity thereof;

14.7.7. There are other items entitling Department of Engineering to a set-off against the amount recommended, or

14.7.8. Department of Engineering has actual knowledge of the occurrence of any of the events enumerated in paragraph 14.7.1 through 14.7.3 or paragraphs 15.2.1 through 15.2.4 inclusive.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify Department of Engineering in writing that the entire Work is substantially complete (except for minor items that may be specifically listed by CONTRACTOR as incomplete) and request a certificate of Substantial Completion. Within a reasonable time thereafter, Department of Engineering and CONTRACTOR shall make an inspection of the Work to determine the status of completion. If Department of Engineering does not consider the Work substantially complete, Department of Engineering will notify CONTRACTOR in writing giving the reasons therefor. If Department of Engineering considers the Work substantially complete, Department of Engineering will prepare and deliver a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion and which shall establish the Closeout Time. There shall be attached to the certificate a tentative list of items to be completed or corrected during the Closeout Time and before final payment (the "Punch List").

The failure to include an item on the Punch List shall not alter the responsibility of the CONTRACTOR to complete all Work in accordance with the Contract Documents. Department of Engineering shall have seven days after receipt of the tentative certificate during which to make written objection to any provisions of the certificate or attached list. If, after considering such objections, Department of Engineering concludes that the Work is not substantially complete, Department of Engineering will within fourteen days after submission of the tentative certificate notify CONTRACTOR in writing, stating the reasons therefor. At the time of delivery of the tentative certificate of Substantial Completion Department of Engineering will deliver to CONTRACTOR a written recommendation as to division of responsibilities during the Closeout Time and pending final payment between Department of Engineering and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees.

14.9. Department of Engineering shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but Department of Engineering shall allow CONTRACTOR reasonable access to complete or correct items on the Punch List.

Partial Utilization:

14.10. Use by OWNER at Department of Engineering's option of any substantially completed part of the Work which (i) has specifically been identified in the Contract Documents, or (ii) which 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, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. Department of Engineering at any time may advise CONTRACTOR in writing that the OWNER intends to use any part of the Work which Department of Engineering believes to be ready for its intended use. Within five working days after either such advice, Department of Engineering and CONTRACTOR shall make an inspection of the relevant part of the Work to determine its status of completion. If CONTRACTOR disagrees with the Department of Engineering's judgment as to the readiness for use of any part of the work designated by the Department of Engineering as being intended for occupancy, CONTRACTOR shall, within five (5) working days of the inspection referred to above, advise Department of Engineering in writing as to those areas which the CONTRACTOR agrees are ready for occupancy and, as to those areas which the CONTRACTOR contends are not ready for occupancy, the date on which said areas will in fact be ready for occupancy.

14.10.2. Upon commencement of use of any part of the Work for its intended purpose the OWNER shall be responsible for obtaining and maintaining insurance coverage for that part of the Work which is actually placed in service by the OWNER.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire Work is complete, Department of Engineering will make a final inspection with CONTRACTOR and will notify CONTRACTOR in writing of all Work which is incomplete or defective. If the inspection discloses an item not previously included on the Punch List which is not in accordance with the requirements of the Contract Documents, it shall be added to the Punch List. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies. Addition of items to the Punch List shall not extend the Closeout Time.

Following completion and correction of the items on the Punch List, the CONTRACTOR shall submit a request for another inspection by the Department of Engineering to determine whether there are any previously undetected items not in conformity with the Contract Documents and whether all listed items have been completed or corrected. If more than two inspections by the Department of Engineering are required due to the CONTRACTOR's failure to complete or correct

the Work, the CONTRACTOR shall bear all reasonable costs incurred by the Department of Engineering attributable to such additional inspections, including expenses.

Final Application for Payment:

14.12 After CONTRACTOR has completed all such corrections to the satisfaction of Department of Engineering and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, (ii) consent of the surety, if any, to final payment, and (iii) complete and legally effective releases or waivers of all Liens arising out of or filed in connection with the Work. In lieu of such releases or waivers of Liens and as approved by Department of Engineering, CONTRACTOR may furnish receipts or releases in full and an affidavit or certification of CONTRACTOR that: (i) the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and

(ii) all payrolls, material and equipment bills and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible 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 Department of Engineering to indemnify Department of Engineering against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of Department of Engineering's observation of the Work during construction and the final inspection, and review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Department of Engineering is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, Department of Engineering will indicate in writing a recommendation of payment and present the Application for payment. At the same time Department of Engineering will also give written notice to CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, Department of Engineering will return the Application 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.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed the Department of Engineering shall, upon receipt of CONTRACTOR's final Application for Payment make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished

as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to Department of Engineering with the Application for such payment.

Waiver of Claims:

14.15. The making and acceptance of final payment will constitute:

14.15.1. A waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.11, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

14.15.2. A waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing in accordance with the time and other requirements of the Contract Documents, and still unsettled.

ARTICLE 15--SUSPENSION OF WORK AND TERMINATION

15.1. Department of Engineering May Suspend Work: At any time and without cause, Department of Engineering may suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

OWNER May Terminate:

15.2. Upon the occurrence of any one or more of the following events the OWNER may terminate the contract in accordance with this Paragraph:

15.2.1. If CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established and revised under paragraph 2.9);

15.2.2. If CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.3. If CONTRACTOR disregards the authority of the Department of Engineering or OWNER;

15.2.4. If CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

Department of Engineering may, after giving CONTRACTOR seven (7) days' written notice terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), 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 finish the Work as Department of Engineering may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished.

If the unpaid balance of the Contract Price exceeds all costs, losses and damages sustained by OWNER arising out of or resulting from completing the Work (including but not limited to all

fees and charges of engineers, architects, attorneys and other professionals and all court or other dispute resolution costs) such excess will be paid to CONTRACTOR. If such costs, losses and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs, losses and damages incurred by OWNER will be reviewed as to their reasonableness and when so approved incorporated in a Contract Amendment, provided that when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR or its surety then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR or its surety from liability.

15.4. Upon seven (7) days' written notice to CONTRACTOR, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Agreement. In such case, CONTRACTOR shall be paid (without duplication of any items):

15.4.1. For completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

15.4.2. For expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

15.4.3. For amounts paid in settlement of terminated contracts with Subcontractors, Suppliers and others; and

15.4.4. For reasonable expenses directly attributable to termination.

CONTRACTOR shall not be entitled to consequential damages, loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination or for any other reason, except in those circumstances where the exclusion of such damages has been declared to be against public policy as a matter of law. In addition, OWNER shall not be liable to CONTRACTOR or to any other person or entity for any consequential damages, loss of anticipated profits, or other economic loss arising out of CONTRACTOR's termination of any contract with any Subcontractor, supplier, or other person or entity whether pursuant to this Section or for any other reason.

CONTRACTOR May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR:

a) the Work is suspended for a period of more than ninety (90) consecutive working days by OWNER or under an order of court or other public authority; or

b) if the OWNER, without justification, fails to take action with respect to any Application for Payment within thirty days after it is submitted, provided, however, that the postponement of any regular meeting of the Authority's governing body shall not trigger the operation of this paragraph;

then CONTRACTOR may, upon ten business days' written notice by certified mail to OWNER, and provided OWNER does not within that time cure the reason or reasons why termination of the contract is sought, terminate the Agreement and recover from OWNER payment on the same terms as provided in paragraph 15.4. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if OWNER failed to act on an Application for Payment within thirty days after it is submitted, CONTRACTOR may upon seven day's written notice to OWNER stop the Work until payment of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.5 are not intended to preclude CONTRACTOR from making claim under Articles 11 and 12 for an increase in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping Work as permitted by this paragraph.

ARTICLE 16--DISPUTES; DAMAGES; SEVERABILITY

Alternative Dispute Resolution

16.1 The parties shall negotiate in good faith with respect to any dispute or disagreement arising under the Contract Documents. In the event that good faith negotiation fails to resolve any dispute and pursuant to NJSA 40A:11-50, disputes arising under the Contract Documents shall be submitted to mediation pursuant to the Construction Industry Mediation Rules of the American Arbitration Association(AAA), as said Rules may exist at the time of signature of the contract documents, prior to the submission of any such dispute to a court for adjudication. The parties shall participate in the mediation in good faith.

Mediation shall be requested by either ACUA or Contractor by filing with AAA, a submission to mediation or written request for mediation in accordance with AAA's Construction Industry Mediation Rules. ACUA or Contractor, as the case may be, shall notify the other party at least ten days prior to filing any such request so as to provide an additional opportunity to resolve the dispute prior to the start of the mediation process.

Notwithstanding industry rules or any provision of law to the contrary, where a dispute concerns more than one contract, such as when a dispute involving construction relates to a contract involving design, architecture, engineering or management, upon the demand of either ACUA or Contractor other interested parties may be joined in the dispute subject to the approval of the mediator. In addition, with the permission of the mediator the parties may join multiple disputes under a single contract, or under related contracts, in a single mediation.

Nothing contained in this Section or in any other part of the Contract Documents shall prevent ACUA from seeking injunctive or declaratory relief in court at any time. The requirement of this Section that disputes under the Contract Documents shall be submitted to mediation shall not apply to disputes concerning the bid solicitation or award process, or to the formation of contracts or subcontracts to be entered into pursuant to the New Jersey Local Public Contracts Law, N.J.S.A. 40A:11-1 et seq. In addition, nothing contained in this Section or in any other part of the Contract Documents shall be construed so as to require ACUA to act in a manner that is contrary to the Local Public Contracts Law or any other law and cases interpreting same.

No Consequential Damages

16.2 In no event and under no circumstances, shall ACUA be liable to Contractor or any person or entity claiming by or through Contractor, for indirect, special, or consequential damages of any kind arising from or relating to the Agreement or the performance of the Work.

ACUA shall have no monetary liability to Contractor for any delay in the issuance of Notice to Proceed or in any other aspect of the performance or administration of the contract or of its obligations thereunder, except in the event of its negligence, bad faith, active interference with

Contractor, or other tortious conduct. In all other cases Contractor's remedy shall be limited to an extension of the Contract Time. Nothing contained herein shall be construed so as to be inconsistent with N.J.S.A. 2A:58B-3.

ARTICLE 17--MISCELLANEOUS

17.1. Giving Notice: Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.2. Computation of Times: When any period of time is referred to in the Contract Documents 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. A calendar day of twenty-four (24) hours measured from midnight to the next midnight will constitute a day.

17.3. Notice of Claim: Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose, and shall not apply to any request by CONTRACTOR for an adjustment to the Contract Price.

17.4. Cumulative Remedies: The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR and all of the rights and remedies available to OWNER hereunder, 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 Documents, and 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.

17.5. Neither party to the contract shall assign the contract or sublet it as a whole without the written consent of the other nor shall the CONTRACTOR assign any monies due or to become due to him hereunder without the previous written consent of the Department of Engineering.

17.6 If any other provision of the Contract Documents shall be considered void or against public policy, said provision shall be considered to be severable and shall be construed in a manner which shall render the contract enforceable.

ARTICLE 18 – PREVAILING WAGE RATES

18.1. For this contract, the minimum prevailing wage rate which is to be paid to each classification of employee is determined by the State of New Jersey and full compliance with the Prevailing Wage Act is required. The most current wage determination available to the Department of Engineering is contained in the Contract Documents. CONTRACTOR shall be responsible for ensuring compliance with the Act and that all prevailing wage rates are current.

18.2. A legible copy of the most recent wage determination shall be prominently posted and maintained by the CONTRACTOR at such place or places on the project site where it can be easily seen by employees.

18.3. Payment of Employees B The CONTRACTOR shall pay each employee in the full amount earned, less approved deductions, computed at no less than the rate established for the particular trade classification in the wage rate schedule and in accordance with all overtime compensation and fringe benefits requirements.

ARTICLE 19 – PAYROLL FORMS AND CERTIFICATIONS

19.1. The CONTRACTOR and each of his Subcontractors must submit weekly a certified copy of the payroll to the Department of Engineering or the OWNER's designated representative.

ARTICLE 20 – PAYMENTS TO SUBCONTRACTORS

20.1. Within ten (10) days after the CONTRACTOR receives payment on account of a periodic estimate of the value of the work done, he shall pay to Subcontractor the sum contained therein, for the value of said Subcontractor's work, less any retainage or amounts withheld in consequence of any legal proceedings or statutory liens, and less any amount due the CONTRACTOR under the subcontract. The CONTRACTOR shall forthwith pay to the Subcontractor the full amount received as aforesaid from the OWNER for the account of such Subcontractor less any amount due the CONTRACTOR under the subcontract.

ARTICLE 21 – LIQUIDATED DAMAGES

21.1. Time is of the essence in the execution and completion of this Contract in order to provide the OWNER with the proposed facilities. The CONTRACTOR shall complete all Work within the time set forth in Article 0.

21.2. As actual damages for any delay in completion of the work which the CONTRACTOR is required to perform under this Contract are impossible to accurately determine, the CONTRACTOR and his Sureties shall be liable for and shall pay to the OWNER, the Liquidated Damages as set forth in Article 0, for each calendar day of delay in completion of the Work (not including maintenance) beyond the Contract Time in achieving Substantial Completion. In the event that the Contract Documents call for reduction in Liquidated Damages due to the partial utilization of the Work by the OWNER, the liquidated damages shall be payable at the higher amount up to the date of partial utilization or use and only thereafter at the lower amount. (Example: The Work is delayed ten days when the OWNER takes partial utilization, and is delayed twenty days thereafter before Substantial Completion. Liquidated damages are payable at the higher rate for ten days and at the lower rate for twenty days.)

21.3 The OWNER'S acceptance and use of any part of the Work shall not excuse CONTRACTOR'S obligation to pay liquidated damages hereunder for failure to achieve Substantial Completion of the entire work within the Contract Time.

21.4 Whether or not to accept any part of the Work prior to Substantial Completion is wholly the Department of Engineering's discretion. Under no circumstances shall the Department of Engineering, by way of any implied duty to mitigate damages or for any reason, be obligated to accept any part of the Work until Substantial Completion of all the Work, or be deemed to have waived any right to any portion of liquidated damages by reason of electing not to accept any part of the Work before Substantial Completion is achieved. CONTRACTOR shall make no claim against the OWNER, by way of set-off or recoupment or on any basis, by reason of Department of Engineering's failure or refusal to accept any part of the Work prior to Substantial Completion.

21.5 In the event that the CONTRACTOR does not complete the work within the stipulated Contract Time, the CONTRACTOR shall be liable to pay the OWNER, any wages paid by the OWNER to any inspector or inspectors necessarily employed by it on the work, for any number of calendar days in excess of the Contract Time.

ARTICLE 22 – TESTING FIRM

22.1. Testing laboratory services will be conducted at and by a testing laboratory as designated by CONTRACTOR and as accepted by the Department of Engineering. Cost of such work will be paid for by the CONTRACTOR. The CONTRACTOR shall furnish required samples without charge and provide every facility including necessary work and equipment for the securing of samples.

ARTICLE 23 – OVERTIME

23.1. CONTRACTOR shall furnish at all times a sufficient number of skilled workmen and equipment to carry on the work under the contract to meet the schedule. If the CONTRACTOR delays the progress of the work for reasons not beyond his control, the CONTRACTOR shall, at his own expense, and cost, work such overtime as may be necessary to avoid delay in the completion of the work covered by the Contract.

ATLANTIC COUNTY UTILITIES AUTHORITY
Atlantic County, New Jersey

Technical Specifications
for
Rebid Geothermal Borefield Replacement

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**SECTION 01010
SUMMARY OF WORK**

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Provide all labor, superintendence, materials, tools and equipment and all means of construction necessary and reasonably incidental to complete the installation of all work as specified herein and as shown on the Contract Drawings.
- B. All materials and labor required and as necessary for the proper installation and/or operation of same, although not specifically indicated on the Contract Drawings and/or in the Specifications shall be provided by the Contractor as if called in detail without additional cost to the Owner.
- C. The Contractor shall be solely and directly responsible to the Owner, NJDEP, EPA, and any other Agency for any damage, injury, expense, loss, inconvenience, delay, environmental damage, fines, suits, actions, or claims of any character brought because of injuries or damage that may result from carrying out of the work to be done under this contract.
- D. In the event of any spillage into the environment, the Contractor shall promptly notify the Owner, cooperate with the Owner and the State or NJDEP in restoring the environment as promptly as possible and bear all responsibility and costs for all the work including any fines.
- E. The work in general includes but is not limited to the procurement, construction, and installation of a geothermal wellfield at 6700 Delilah Road, Egg Harbor Township, NJ 08234 with work consisting of but not limited to:
 - 1. Installation of a total of 28 six-inch (6") diameter bores to a depth of 500 feet including 1 1/4-inch internal HDPE circulating pipe loop, grouting and related appurtenances as shown on the Contract Drawings.
 - 2. Work will include but is not limited to stripping and stockpiling of topsoil, excavation and backfill for HDPE piping, sheeting and shoring (if necessary), dewatering (if necessary), cast-in-place concrete (if necessary for concrete sidewalk repairs), electrical wiring, mechanical piping, connection to existing geothermal piping system, and site restoration to its original condition.
 - 3. Connection of the new wellfield and circulating piping system into the existing internal manifold system piping is required. Existing core drilled holes through the existing concrete basement wall shall be used. Modifications of the existing manifold system are required as well as replacement of the existing circulating pumps/bases in the basement mechanical room is required.
 - 4. All work must be performed without interrupting the operation of the ACUA

Administration Building located immediately adjacent to the site. Coordination with the Authority's Engineering and Central Maintenance Departments will be required for final connections.

1.2 QUALITY CONTROL

- A. The Contractor shall make personal examination and verify all dimensions, elevations, utilities, and existing equipment characteristics and locations as shown on the Contract Drawing. If a discrepancy exists, the Contractor shall immediately notify the Owner/Engineer.
- B. If a discrepancy exists, the Owner/Engineer shall direct the Contractor as how to proceed. If there is no substantial change to the scope of construction as shown on the Contract Drawing or as called out in the specifications, no additional compensation shall be due as result of field direction.
- C. It shall be the Contractor's responsibility to coordinate construction activities with the Authority and/or Engineer to assure that a superintendent is on site during all construction.
- D. All materials shall be commercially available products of a reputable experienced manufacturer or supplier acceptable to the Owner/Engineer.
- E. The contractor shall follow generally acceptable industry practices and standards for quality and workmanship acceptable to the Engineer/Owner.
- F. Unsuitability of Specified Products: No claim by the Contractor concerning the unsuitability of any material specified or his inability to produce first class work with same will be entertained unless such claim is made in writing to the Engineer before the work is started.

1.3 SUBMITTALS

- A. General
 - 1. All submittals required shall be made in accordance with the GENERAL CONDITIONS for Owner/Engineer review and acceptance.
 - 2. Submittals shall be provided in accordance with any submittal requirements in the body of this Specification shall be made in accordance with the above Section.

**SECTION 01015
CONTRACTOR'S USE OF THE SITE**

PART 1 - GENERAL

1.01 CONTRACTOR RESPONSIBILITIES

- A. This section covers the CONTRACTOR's rights and obligations concerning the use of the project site.
- B. The CONTRACTOR shall always cooperate with OWNER and provide a safe access to all facilities on the site.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01035 - Health and Safety Requirements

1.03 SITE ACCESS

- A. The CONTRACTOR shall only be allowed access to the work area after approval of the Health and Safety Plan by the OWNER (See Section 01035).
- B. The CONTRACTOR shall notify the OWNER at least forty-eight (48) hours in advance of any required access to the work site. The CONTRACTOR shall not take it upon him/herself to gain access to any of the work sites.
- C. The CONTRACTOR shall provide the OWNER with a listing of all personnel and vehicles working on the site.

1.04 SPECIAL REQUIREMENTS

- A. The attention of the CONTRACTOR is specifically directed to the exacting requirements in connection with any construction impacting any existing ACUA Facility. The work shall be performed in a workmanlike manner so as to interfere with traffic as little as possible.

The CONTRACTOR shall provide adequate protection of the existing building access.

The CONTRACTOR shall provide adequate signs, barricades, and take all necessary precautions for the protection of the work and the safety of the public. Barricades shall be of substantial construction and shall be painted such as to increase their visibility at night. Suitable warning signs shall be so placed and illuminated as to show in advance where construction or barricades exist.

1.05 PERMITS

The CONTRACTOR shall be responsible for obtaining all applicable permits for construction, including Municipal, County and/or State permits.

1.06 CLEAN-UP

During construction all efforts shall be made to maintain a neat and orderly project. Clean-up shall be pursued on a regular basis and in conjunction with the construction. The CONTRACTOR shall be responsible for clean-up during the life of this contract. Upon completion of all construction, final clean-up shall include removal of all excess material, equipment, backfill, etc., and the site shall be restored to a condition equal to or better than existing prior to construction. Should the CONTRACTOR fail to remove such material, equipment and supplies, the OWNER, shall have the right to remove them at the expense of the CONTRACTOR.

END OF SECTION

01015-2

**SECTION 01035
HEALTH AND SAFETY REQUIREMENTS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Required Submittals
- B. General Safety Procedures
- C. Operational Safety Procedures
- D. Confined Space Entry

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01010, Summary of Work
- B. Section 01015, Contractor's Use of the Site

1.03 REFERENCES

- A. OSHA
- B. All standard operating Safety Guides

1.04 SUBMITTALS

- A. Within a minimum of seven (7) days prior to the start of work on-site, the CONTRACTOR will submit for approval a written Health and Safety Plan (HASP) to the OWNER. The CONTRACTOR will not be allowed on site until the Health and Safety Plan has been reviewed by the OWNER. At a minimum, the HASP shall address all areas of site operations, provide standard operating safety procedures, address anticipated hazards, equipment to be used, emergency procedures, and communications. The HASP should include but is not limited to the equipment in Part 2 and to the procedures in Part 3.
- B. Material Safety Data Sheets (MSDS) for all materials to be used on-site by the CONTRACTOR must be submitted to the OWNER ten (10) days prior to delivery of materials.

PART 2 - PRODUCTS

2.01 PERSONAL PROTECTIVE EQUIPMENT

- A. Air Monitoring and Survey Instruments

The CONTRACTOR shall always have available the below listed instrumentation. Said instrumentation shall be intrinsically safe certified Division I, Class I by UL, FM or NFPA.

1. Organic Vapor Detector
2. Explosimeter
3. Oxygen Meter

B. Personnel Protection - General

The CONTRACTOR shall provide and ensure that the Personnel Protective Equipment is available and always worn by all persons in the work area.

1. Hard Hat
2. Safety Glasses
3. Safety Shoes, as required

C. Personal Protection - Respiratory

1. Air Purifying Respirators
2. Self-Contained Breathing Apparatus
3. Airline Supplies Air respirators
4. Air Escape Packs (15 minutes minimum)

2.02 EQUIPMENT

A. Electrical Equipment

All electrical equipment and conductors to be used within 50 feet of manholes or where a hazardous accumulation of flammable vapors may exist, will be Class I, Division I, Group D, with maximum temperature rating of "T2D" -419 Degrees Fahrenheit, as defined in the National Electrical Code for use in hazardous (explosive) areas.

B. Portable Lights

Explosion-proof portable battery-powered lights are the only lights authorized for manhole entry. (Mining Enforcement and Safety Administration approved).

C. Air-Movers, Ventilation

Air-movers shall be either explosion-proof and electrically operated, or air-driven, educator type only. One (1) air-driven type is listed in the MSDA Catalog as a "Lamb Air-Mover Ventilator". All air-movers used shall be the educator type capable of educating vapors from the manhole.

PART 3 - EXECUTION

3.01 GENERAL

- A. The CONTRACTOR shall comply with all applicable industry standards including, but not limited to, OSHA Construction Standards, NFPA Standards, API Guidelines, and the OWNER'S Standard Operating Procedures.

- B. The CONTRACTOR shall take all necessary precautions as may be required by laws and regulations and the Contract Documents and as determined by the OWNER, for the protection of the OWNER's and other contractor's property, as well as adjacent property. By such provisions, the CONTRACTOR shall also protect all persons who may be on the premises or on adjacent areas affected by the CONTRACTOR's operations. The CONTRACTOR shall take measures to assure his/her personnel and all subcontractor's personnel under his/her jurisdiction observe applicable safety precautions while working on the OWNER's property.
 - 1. All field crew members shall make use of their sense (all senses) to alert them to potentially dangerous situations in which they should not become involved (i.e. presence of strong, irritating or nauseating odors).
 - 2. Field crew members shall be familiar with the physical characteristics of investigations, including:
 - a. Wind direction in relation to the ground zero area.
 - b. Accessibility to associates, equipment, vehicles.
 - c. Communications
 - d. Site access
 - e. Nearest water sources.

The number of personnel and equipment in the work area should be minimized, but only to the extent consistent with the work force requirements of safe site operation.

Proper protective clothing and equipment, in addition to steel toe work shoes, should be dictated by the CONTRACTOR and should be appropriate protection for the work performed. The CONTRACTOR shall be responsible for enforcing the use of appropriate safety equipment and clothing for any work performed for the OWNER and while personnel are on OWNER's property.

3.03 EMERGENCY PROCEDURES

- A. First Aid

The CONTRACTOR shall ensure that site workers are familiar with chemical exposure symptoms and appropriate first aid procedure.

3.04 MANHOLE OR PIPE ENTRY

- A. All personnel will treat Manhole or Pipe Entry as a Confined Space Entry-Special Hazard, and all manholes, similar vessels and partially or entirely closed spaces shall be regarded as being potentially dangerous. Before entering a confined space, a Confined Space entry Permit form must be submitted to the OWNER for approval.
- B. The CONTRACTOR shall submit a Confined Space Entry Procedures plan as part of the Health and Safety Plan.
- C. The CONTRACTOR shall submit proof (i.e., Certificate of Completion) that personnel working on site have completed training requirements for OSHA 1910.146 Confined Space Health and Safety Training.

3.05 ACCIDENT REPORTS

- A. If death, serious injury, or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the OWNER. In addition, the CONTRACTOR must promptly report in writing to the OWNER all accidents whatsoever arising out of, or in connection with, the performance of the work whether on, or adjacent to, the site, giving full details and statements of witnesses.
- B. If a claim is made by anyone against the CONTRACTOR or any SUBCONTRACTOR on account of any accident, the CONTRACTOR shall promptly report the facts in writing to the OWNER, giving full details of the claim.

END OF SECTION

SECTION 01300

AS BUILT DRAWINGS AND OPERATING AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.01 PROJECT RECORD AS BUILT DRAWINGS

- A. As the work progresses, the Contractor shall keep a complete and accurate record of all changes or deviations from the Contract Documents and the Shop Drawings, indicating the work as actually installed.
1. Record Drawings (As-Built Drawings) shall be based on the Contract Drawings, Shop Drawings, and supplementary drawings with all revisions required to depict the actual installation. The Contract Drawings can serve as a basis for preparation of the as-built drawings. However, the contractor is expected to prepare his own drawings and to delineate exactly the installation details of all equipment, using as many additional drawings as are necessary to show the final as-built installation. All drawings shall be prepared in a neat and professional manner.
 2. The Record Drawings shall be provided in 24" x 36" hard copy sets and in both AutoCAD PDF file format.
 3. Each drawing shall have a title block in the lower right-hand corner with the Work Number, Project Description, description of items shown on the drawing, date, scale (if appropriate), contractor's name, and the words "As Built".
 4. Complete installation details shall be neatly and correctly shown on the respective portion of the drawings, with appropriate supplementary notes.
 5. All underground installations shall be dimensioned and referenced to above ground fixed structures. A preliminary, as installed, dimensioned drawing of the underground installation shall be submitted to the engineer prior to backfilling excavation.
 6. Preliminary record drawings of all field-wiring terminations shall be submitted to the engineer within one week of the completion of these terminations.
 7. A list shall be provided on the Drawings, identifying all equipment and materials installed by reference item number, description, manufacturer, and catalog number.
 8. Copies of these Record Drawings shall be kept at the job site, up to date and available for inspection by the Engineer or his representative. Preliminary copies of all drawings shall be provided to the Engineer upon his written request at any time during the Contract.
 9. Upon completion of the work of the Contract, the Contractor shall deliver to the Owner three complete preliminary sets of all Record Drawings.
 10. After making any corrections required by the Engineer, the Contractor shall submit to the Owner two complete final sets of Record Drawings (both Contract Drawings and

Shop Drawings) described above. In addition to the hard copy sets, the contractor shall provide a complete set of Record drawings electronic files of each drawing in both AutoCAD and PDF file format, with file names based on the drawing number.

11. Each Drawing shall have an endorsement by the Contractor, certifying that the information is complete and accurate.

- B. Final payment will not be made on the Contract until the required record sets have been furnished in an acceptable manner. No review or receipt of such documents by the Engineer shall be a waiver of any deviation **from the Contract Documents or the Shop Drawings, or in any way relieve the Contractor from his responsibility to perform the work in accordance with the Contract Documents and the approved shop drawings.**

1.02 OPERATING AND MAINTENANCE MANUALS

- A. The Contractor shall furnish complete sets of O & M Manuals containing the manufacturers' instructions for maintenance and operation of, and parts lists for, each piece of equipment furnished under his Contract, and any additional data required by these Contract Documents. All such information shall clearly indicate the particular piece(s) of equipment to which it applies, including equipment name, manufacturer, model number, serial number(s), and year of manufacture.
- B. Each set of O & M Manuals shall contain a complete set of reduced-size prints of all Record Drawings as described above.
- C. Each Operating and Maintenance Manual for Electrical Work shall also include a complete set of reduced-size prints of all original Electrical Contract Drawings, a complete set of permits, certifications, warranties, and manifestos.
- D. The O & M Manuals shall be arranged in proper order, indexed, and suitably bound (e.g., in ring binders of good quality). The Contractor shall certify by endorsement on each Manual that that O & M Manual is complete and accurate.
- E. The Contractor shall submit to the Engineering Department three (3) complete preliminary sets of Operating and Maintenance Manuals.
- F. After review, one (1) set of the O & M Manuals will be returned to the Contractor for final revisions.
- G. After making any required additions or corrections, the Contractor shall deliver to Engineering Department (3) complete final sets of O & M Manuals.
- H. **In addition, a digital pdf version shall be provided. The digital version shall contain a complete O & M Manual including all text and drawings (including record drawings) in an identical manner to the printed version.** Each digital version shall include a detailed index, which allows easy retrieval of information. All documents and graphics stored on the digital version shall be in Adobe Acrobat TM format.
- I. Final payment on any Contract will not be made until the required Operating and Maintenance Manuals have been furnished in an acceptable manner. Any work performed by change order or any other means that is not in the original scope of the project shall be fully

documented, and the Operation and Maintenance manuals shall be revised and updated as necessary.

PART 2-- PRODUCTS

(NOT USED)

PART 3-- EXECUTION

(NOT USED)

END OF SECTION

**SECTION 01520
MAINTENANCE OF UTILITY
OPERATIONS DURING CONSTRUCTION**

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The existing facilities will be maintained in continuous operation by the Owner during the entire construction period of all Contracts as hereinafter specified.
- B. Work under the Contract shall be scheduled and conducted by Contractor so as not to impede any operation, or cause other nuisance except as explicitly permitted hereinafter. In performing the work shown and specified, the Contractor shall plan and schedule his work to meet the facility operating requirements, and the constraints and construction requirements as outlined in this Section.
- C. The Contractor shall be responsible for coordinating the construction schedule and for ensuring that permanent or temporary power is available for all existing, proposed, and temporary facilities that are required to be on line at any given time.
- D. The Contractor has the option of providing additional temporary facilities that can eliminate a constraint, provided it is done without cost to the Owner and provided that all requirements of these Specifications are fulfilled. Work not specifically covered in the following paragraphs may, in general, be done at any time during the contract period, subject to the operating requirements and constraints and construction requirements outlined hereinafter. All references to days in this Section shall be consecutive calendar days.

1.02 GENERAL CONSTRAINTS

- A. The Contractor shall schedule the Work so that the existing operation is maintained in continuous operation. All Environmental Park operations shall be maintained in continuous operation during the construction period except during approved interruptions. All short-term system or partial systems shutdowns and diversions shall be approved by the Owner and/or Engineer. **Long-term shutdowns will not be permitted by the Contractor.** If in the judgment of the Engineer a requested shutdown is not required for the Contractor to perform the Work, the Contractor shall utilize approved alternative methods to accomplish the Work. **All shutdowns shall be coordinated with and scheduled at times suitable to the Owner. Shutdown of the existing Geothermal system for the purposes of connecting the new system may only take place during the period between Friday at 5:00pm through Monday at 7:00am.** Shutdowns shall not begin until all required materials are on hand and ready for installation. Each shutdown period shall commence at a time approved by the Owner, and the Contractor shall proceed with the Work continuously, start to finish, until the Work is completed and normal operation is restored. If the Contractor completes all required Work before the specified shutdown period has ended, the Contractor may immediately place the existing system back into service. If a shutdown that was done at the request or mistake of the Contractor results in overtime expenses to the Owner, the Contractor is required to bear the costs of the Owner during the overtime periods.
- B. The Contractor shall schedule short-term shutdowns in advance and shall present all desired shutdowns at the progress meetings. Shutdowns shall be fully coordinated with the Owner personnel at least one calendar week before the scheduled shutdown.

- C. Short term shutdowns will be allowed for tie-ins to existing facilities. The Contractor shall provide appropriate facilities, **specifically temporary air conditioning units to be placed in the ACUA computer server room to maintain a temperature of 68 degrees Fahrenheit**, to be approved by the Owner, and at no additional cost to the Owner. The schedule and duration of short-term shutdowns shall be approved by the Owner.
- D. Any temporary work, facilities, roads, walks, protection of existing structures, piping, blind flanges, valves, equipment, etc., that may be required within the Contractor's work limits to maintain continuous and dependable facility operation shall be furnished by the Contractor at the direction of the Engineer at no extra cost to the Owner.
- E. The Owner shall have the authority to order Work stopped provided that, in his opinion, would unreasonably result in interrupting the necessary functions of the facility operations.
- F. If the contractor impairs performance or Operation of the facility as a result of not complying with specified provisions for maintaining facility operations, then the contractor shall immediately make all repairs or replacements and do all work necessary to restore the facility to operation to the satisfaction of the Engineer. Such work shall progress continuously to completion on a 24-hour per day, seven work days per week basis.
- G. The Contractor shall provide the services of emergency repair crews on call 24-hours per day.

1.03 GENERAL OPERATING REQUIREMENTS, CONSTRAINTS, AND CONSTRUCTION REQUIREMENTS

A. Personnel Access

- 1. Owner personnel shall have access to all areas which remain in Operation throughout the construction period. The Contractor shall locate stored material, dispose of construction debris and trash, provide temporary walkways, provide temporary lighting, and other such work as directed by the Engineer to maintain personnel access to areas in operation. Access and adequate parking areas for owner personnel must be maintained throughout construction.

B. Fire Protection Systems

- 1. The Contractor must maintain the existing operation of security and fire protection systems such as fire hydrants, sprinklers, detection and alarm systems and dial up systems. If the Contractor takes any of these items out of service they are required to notify the Engineer and Owner in advance.

PART 2—PRODUCTS

(NOT USED)

PART 3—EXECUTION

(NOT USED)

END OF SECTION

**SECTION 01550
SITE ACCESS AND STORAGE**

PART 1 - GENERAL

1.01 THE REQUIREMENT

A. Storage of Equipment and Materials

1. The Contractor shall store his equipment and materials at the job site in accordance with the requirements of the General Conditions, the Supplemental Conditions, and as hereinafter specified. All equipment and materials shall be stored in accordance with manufacturer's recommendations and as directed by the Owner or Engineer, and in conformity to applicable statutes, ordinances, regulations, and rulings of the public authority having jurisdiction.
2. The Contractor is NOT permitted to use the existing parking lots at this facility for storage of materials.
3. The Contractor shall enforce the instructions of Owner and Engineer regarding the posting of regulatory signs for loading on structures, fire safety, and smoking areas.
4. The Contractor shall not store materials or encroach upon private property without the written consent of the owners of such private property.
5. The Contractor shall not store unnecessary materials or equipment on the job site and shall take care to prevent any structure from being loaded with a weight which will endanger its security or the safety of persons.
6. Materials shall not be placed within ten (10) feet of fire hydrants. Gutters, drainage channels and inlets shall be kept unobstructed at all times.
7. The Contractor shall provide adequate temporary storage buildings/facilities, if required, to protect materials or equipment on the job site.

B. Security

1. The Contractor shall cooperate with the ACUA personnel in maintaining security against unauthorized entry, damage to facility equipment and theft.
2. The Contractor is responsible for the on-site security of his own equipment, tools and supplies, and those of his employees, Subcontractors, suppliers and visitors.

PART 2—PRODUCTS

(NOT USED)

PART 3—EXECUTION

(NOT USED)

END OF SECTION

01550-1

**SECTION 01600
MATERIAL AND EQUIPMENT**

PART 1 - GENERAL

1.01 STORAGE AND PROTECTION

- A. All materials, products, and equipment shall be properly containerized, packaged, boxed, and protected to prevent damage during transportation and handling.
- B. All equipment and materials shall be neatly stockpiled. All new materials shall be stored in manufacturer's containers to the extent practicable and sheltered from the weather.
- C. Materials or items designated to remain the property of the Owner shall be removed with care and stored on site in a location designated by the Engineer.
- D. Where existing materials or items are required to be removed and reinstalled, the Contractor shall remove those materials or items with care and protect and store them until required for reinstallation. The Contractor shall replace any such materials damaged in removal or storage with similar new material to the satisfaction of the Engineer.
- E. Materials or items to be demolished and not designated to remain the property of the Owner, or to be reinstalled, shall become the property of the Contractor, who shall promptly remove such from the site.
- F. Where existing equipment and fixtures are indicated to be reused, the Contractor shall repair such equipment and fixtures, refinish them if necessary, and put them into perfect working order.

PART 2—PRODUCTS

(NOT USED)

PART 3—EXECUTION

(NOT USED)

END OF SECTION

SECTION 02015
MOBILIZATION, SITE PREPARATION AND DEMOBILIZATION

PART 1 – GENERAL

1.01 THE REQUIREMENT

- A. The work specified in this section consists of all work necessary to move in personnel and equipment and prepare the site for construction and to remove the same personnel and equipment from the site when construction is complete.
- B. The limits of the Owner's property or temporary easements are shown on the Drawings.
- C. The Contractor is responsible for his own mobilization and demobilization.
- D. The Contractor shall notify all authorities owning utility lines to or on the property. The Contractor is responsible for protecting and maintaining the utility lines to remain and capping those that are not required in accordance to the instruction of the Owner, the Utility Companies and all other authorities having jurisdiction.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02220 Trenching, Backfilling and Compacting
- B. Section 02222 Excavation
- C. Section 02500 Site Restoration

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Atlantic County Utilities Authority Standard Details.
- B. Atlantic County Department of Public Works, Specifications, latest edition.
- C. Egg Harbor Township, Codes and Ordinances.

1.04 STREET AND ROAD BLOCKAGE

- A. Closing of access driveways, streets and roads is not permitted during progress of the work. Access shall be provided to all facilities remaining in operation.

1.05 PROTECTION OF PERSONS AND PROPERTY

- A. All work shall be performed in such a manner as to protect all personnel, workmen, pedestrians and adjacent property and structures from possible injury and damage.
- B. All conduits, wires, all piping, cables and appurtenances above or below ground shall be protected from damage.

PART 2 – PRODUCTS

2.01 TEMPORARY UTILITIES

- A. Contractor shall provide all temporary facilities required for performing the Work as specified in Section entitled “Temporary Utilities”.

PART 3 - EXECUTION

3.01 LAYOUT

- A. The Contractor shall set up construction facilities in a neat and orderly manner within designated areas as stipulated by the Owner and shown on Contract Drawings. The Contractor shall accomplish all required work in accordance with applicable portions of these specifications and shall confine its operations to work areas as shown on the drawings.

3.02 DEMOBILIZATION

- A. At the completion of work, the Contractor shall remove its personnel, equipment, and temporary facilities from the site in a timely manner. The Contractor shall also be responsible for transporting all unused materials belonging to the Owner to a place of storage on site designated by the Engineer and for removing from the site and disposing of all other materials and debris resulting from the construction. The materials shall be disposed of in accordance with state and federal regulations. The Contractor shall then return all areas used for its activities to an equal or better condition prior to construction or to the Condition as noted On the Contract Documents.

END OF SECTION

SECTION 02151
SHEETING, SHORING, AND BRACING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Sheeting, shoring, and bracing to prevent caving or failure of excavation sides.
- B. Sheeting, shoring, and bracing to protect existing buildings, pavements, walkways, utilities, and other improvements.

1.02 RELATED SECTIONS

- A. Section 02220 – Trenching, Backfilling and Compacting.
- B. Section 02222 - Excavation.

1.03 SUBMITTALS

- A. Submit design and computations for all sheeting, shoring, and bracing (if required). Design and computations shall be performed by a Professional Engineer licensed to practice Engineering in the State of New Jersey. The submittal shall include the seal and signature of the designer.

1.04 REGULATORY REQUIREMENTS

- A. Conform to all Federal, State, and local laws, regulations, and codes relating to excavation.
- B. Conform to excavation regulations published by U.S. Department of Labor, Occupational Safety and Health Administration (OSHA).

1.05 SITE CONDITIONS

- A. The CONTRACTOR is entirely responsible for design, construction, and maintenance of sheeting, shoring, and bracing. The OWNER and ENGINEER will assume no responsibility for injury to personnel or damage to property caused by cave-ins or other failure of excavation sides.
- B. The OWNER may order sheeting, shoring, and bracing left in place for the protection of the finished Work and existing facilities.
 - 1. When sheeting, shoring, or bracing is ordered left in place, remove all members to an elevation three feet below finished grade.
 - 2. When sheeting, shoring, and bracing is ordered left in place, the cost of such work will be paid based on a mutually accepted fee prior to leaving in place.
- C. Protect existing active sewer, water, gas, electric and other utility services and structures both below the surface and overhead.

- D. Notify municipal agencies, service utility companies having jurisdiction and New Jersey One-Call (1-800-272-1000). Comply with requirements of governing authorities and agencies for protection, relocation, removal, and discontinuance of services affected by the Work.
- E. Damaged utility: The Contractor shall notify the owner of damaged to utilities and cause the making all repairs at no cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Provide suitable sheeting, shoring, and bracing materials which will support loads imposed.
- B. Wood Materials
 - 1. Use wood sheeting, sheet piling, bracing, and shoring which is in sound, serviceable condition.
 - 2. If wood is part of shoring system to protect existing structures, or buildings, use pressure preservative treated materials.
- C. Steel Materials: Steel sheet piling and bracing of equal strength may be substituted for wood. Trench Boxes may also be used if approved by the ENGINEER.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Drive or set sheeting, sheet piling, braces, and shores in place and arrange such that they may be withdrawn as the excavations are backfilled, without damage to piping and structures, and without damage to or settlement of adjacent structures, buildings, utilities, and pavements.
- B. Maintain sheeting, shoring, and bracing in excavations regardless of time excavations will be open. Carry down sheeting, shoring, and bracing as excavation progresses.
- C. Locate the shoring system to clear permanent construction and to permit forming and finishing of concrete surfaces.
- D. Do not place bracing where it will be cast into or included in permanent concrete work, except as otherwise acceptable to the OWNER.
- E. Remove sheeting, shoring, and bracing in stages as backfilling progresses to avoid disturbance and damage to structures, buildings, utilities, and pavements.
- F. Repair or replace, as acceptable to the OWNER, adjacent facilities or work damaged or displaced through installation or removal of sheeting, shoring, and bracing.
- G. Enclose all excavations with safety fencing and warning signage in accordance with applicable laws and regulations when not actively working in the area of the excavation.

END OF SECTION

02151-3

SECTION 02220
TRENCHING, BACKFILLING AND COMPACTING

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Provide all superintendence, labor, materials, and equipment necessary to excavate and prepare trenches suitable for the installation of pipe as herein specified and to complete the work of this section in accordance with the Contract Documents.
- B. The work includes, but is not limited to:
 - 1. Trench excavation for pipeline construction, including shoring, sheeting, pipe bedding, backfilling, compaction, and surface restoration.
 - 2. Dewatering materials and work including temporary site drainage necessary for construction and adjacent areas affected by the Contractor's Operations.
 - 3. Removal and disposal of all disturbed and excavated material not suitable for backfill. All soil material not suitable for backfill shall be removed and disposed of at an NJDEP approved Solid Waste Facility with all costs (including disposal and tipping fees) being part of this contract and the responsibility of the Contractor. All non-soil materials shall be disposed of at the ACUA Environmental Park Landfill with all costs (including disposal and tipping fees) being part of this contract and the responsibility of the Contractor.
 - 4. Procurement and installation of new select fill with compaction and associated compaction testing.
- C. Included is the placement, maintenance, and removal when no longer required of all soil erosion and sediment control measures.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Pipe, fittings, and filter fabric shall be as shown on Drawings and as specified in the Contract Documents.
- B. 3/4-inch broken stone material shall be used for trench stabilization if required. Material shall be installed full width of the trench and from a depth of not less than twelve (12) inches below the bottom of the pipe with material extending up to the top of the pipe. Broken stone material shall have clean, hard, strong, uncoated particles free from injurious amounts of soft, friable, thin, elongated or laminate pieces, alkali, organic or other deleterious matter.
- C. Existing material removed from excavations shall be used as backfill. If additional backfill is required new select fill shall be supplied and installed by the Contractor. Select fill shall be gravel, sandy gravel, or gravelly sand free of organic material, loam, wood, trash, snow, ice, frozen soil and other objectional material and shall be graded within the following limits:

<u>Sieve</u>	<u>Percent Passing</u>
6-in.	100
No. 4	90 - 100
No. 40	40 - 70
No. 200	0 - 12

Select fill shall contain no stones larger than 2 in. in its largest dimension.

- D. Pipe Bedding shall be placed to a depth of 6 inches below all piping and shall be fine sand and shall be graded within the following limits:

<u>Sieve</u>	<u>Percent Passing</u>
No. 10	100
No. 40	40 - 70
No. 200	0 - 10

PART 3 – EXECUTION

3.01 EXCAVATION

- A. All topsoil shall be removed by scraping to a depth of approximately six (6) inches. The topsoil shall be placed in stockpiles (to be adjacent to the work site) where designated by the Engineer. Only those portions of the site which are necessary and essential for construction shall be cleared. Whenever possible, excavation shall include the removal and storage of topsoil from the site for future use. The length of time of ground disturbance shall be reduced to the minimum practicable, especially in environmentally critical areas. Ground disturbance shall be avoided until immediately preceding construction to minimize exposure of soils.
- B. Pipe trenches shall be excavated along lines shown on the Contract Drawings and to required depths, the maximum width at the trench bottom being equal to the diameter of the pipe, plus twenty-four inches (24"). The trench width can be increased by the Contractor at his expense but shall not be greater than necessary for proper installation.
- C. The Contractor shall carefully support and protect all aerial and underground utilities from injury including but not limited to; utility poles, wired utilities, water pipes, electric wiring and conduits, sanitary and storm sewer lines, and all other structures which do not have to be changed in their location. In case of injury or temporary removal, these facilities shall be restored to as satisfactory conditions as that in which they were found, at the Contractor's expense.

3.02 MATERIALS EXCAVATED

- A. Concrete and asphaltic paving material shall be saw cut and stripped ahead of the trench excavation, loaded onto trucks, and removed from the work area prior to full excavation of the trench and disposed of as specified.
- B. All other excavated materials shall be laid compactly on the side of the trench and at a

distance from the centerline of the trench so as not to cause a failure of the trench wall or trench bottom and shall be kept trimmed up so as to be of as little inconvenience as possible.

3.03 REMOVAL OF WATER

- A. The Contractor shall during the construction, provide and maintain ample means and devices with which he shall promptly remove and properly dispose of all water entering the excavation or other parts of the work, and keep the excavation and structures dry until all work is completed.
- B. The Contractor shall dispose of the water from the trenches and excavations in a suitable manner without damage to adjacent areas. The Contractor shall furnish all necessary machinery, power and labor to pump, bail or otherwise remove water which may be found or shall accumulate in the trenches or other excavations and shall perform all work necessary to keep them clear of water while work is under construction.
- C. Where groundwater and subsoil conditions are such that the Contractor cannot successfully control the water and provide a stable hard trench bottom for the pipelines by ordinary pumping and bailing, the Contractor shall furnish and provide the necessary equipment, power and labor to employ the well point method of trench dewatering, without additional cost to the Owner.

3.04 PIPE BEDDING

- A. Pipe bedding shall be as provided as specified herein and as shown on the trench restoration detail attached to this specification section.
- B. In the event a trench is excavated below the grade shown on the Contract Drawings, it shall be backfilled to grade with the specified trench stabilization/pipe bedding materials and shall be thoroughly compacted, without additional compensation.

3.05 BACKFILLING

- A. Backfilling shall be as specified herein and as shown on the trench restoration detail attached to this specification section and as follows:
 - 1. Backfill material shall be existing material removed from the excavations or select fill material as specified.
 - 2. Initial backfill in the pipe zone shall be carefully placed in six (6) inch lifts and lightly tamped to a point six (6) inches above the pipe.
 - 3. The balance of the trench shall be backfilled, in layers not exceeding eighteen inches (18") in thickness, and carefully compacted with mechanical tampers and compacted to not less than 98% optimum density, as determined by ASTM D1557 and ASTM D1556 standard.
 - 4. Contractor's backfilling shall not cause any damage to the pipe and or fittings and valves.
- B. The Contractor shall be responsible for the acceptable compaction of all trench areas. As

settlement occurs, the Contractor shall refill and regrade, with suitable material, and maintain same.

- C. Backfilling shall include the procurement of material, removal and disposal of disturbed/excavated material, installation of new select fill, compacting or rolling as required, the regrading of adjacent disturbed areas, the replacing of drains and other surface and subsurface structures, the placing and maintaining of temporary walkways and driveways.
- D. It is the intent of the previous requirements for the backfilling of trenches to specify methods which will:
 - 1. Result in thorough compaction of the backfilled material without displacement of the grade or alignment of utility lines and appurtenances.
 - 2. Minimize settlement of the backfilled material.
 - 3. Assure a sound foundation for the pipeline.

3.06 WORKMANSHIP

- A. The Contractor shall be aware that all areas shall be restored to their original conditions, unless changed by the Contract Drawings or the Specifications.

END OF SECTION

**SECTION 02222
EXCAVATION**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Non-Paved area excavation.

1.02 RELATED SECTIONS

- A. Section 02151 - Sheeting, Shoring and Bracing.
- B. Section 02220 – Trenching, Backfilling and Compacting.
- C. Section 02230 - Soil and Select Materials:

1.03 DEFINITIONS

- A. For purposes of this Section, subgrade consists of:
 - 1. Where no aggregate bedding layer is required, the subsoil surface at structure/building bearing surface or bottom of pavement structure.
 - 2. Where an aggregate bedding layer is required, the subsoil surface located 12 inches (or other depth of bedding layer as indicated on Drawings) below bottom of structure/building bearing surface.
- B. Excavation required by this Section is that required to reach elevation at bottom of bedding layer or, where there is no bedding layer required, the structure/building bearing surface or bottom of pavement structure.

1.04 PROTECTION

- A. Protect trees, shrubs, lawns, and other features remaining as a portion of final landscaping.
- B. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from equipment and vehicular traffic.
- C. Protect above and below grade utilities which are to remain.
- D. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in or loose soil from falling into excavation.
- E. Notify OWNER of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- F. Protect bottom of excavations and soil adjacent to and beneath foundations from frost.
- G. Grade excavation top perimeter to prevent surface water runoff into excavation.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Suitable Subsoil - Section 02230.
- B. Unsuitable Subsoil - Section 02230.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Identify known underground utilities. Stake and flag locations.
- C. Notify utility company to perform excavation or to remove and relocate utilities.
- D. Maintain and protect existing utilities remaining which pass-through work area.
- E. Provide supports and protection for all pipe systems, utilities, and electrical conduits/duct banks which pass through excavation areas. CONTRACTOR shall be responsible for repairing utilities, any piping, or electrical facilities damaged during excavation, at no cost to the OWNER.
- F. Notify NJ One Call 1-800-272-1000 at least three (3) days prior to start of excavation.

3.02 EXCAVATION

- A. Excavate subsoil as required for construction operations, and other work.
- B. Machine slope banks to angle of repose or less until shored.
- C. Excavation shall not interfere with normal 45 degree bearing display of any foundation.
- D. Hand trim excavation and leave free of loose matter.
- E. Remove lumped subsoil, boulders, and rock.
- C. Correct unauthorized excavation at no cost to OWNER. Fill over-excavated areas under structure bearing surfaces in accordance with direction by OWNER.
- D. Remove unsuitable subsoil and excess suitable subsoil from Project site.
- H. Excess soil material to be removed from the site shall be disposed of at the ACUA Environmental Park facility.

END OF SECTION

SECTION 02270
EROSION AND SEDIMENTATION CONTROL

PART 1- GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall design, provide, maintain and remove temporary erosion and sedimentation controls as necessary.
- B. Temporary sedimentation controls include, but are not limited to silt dams, traps, barriers and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the Owner.
- C. Contractor shall provide effective temporary erosion and sediment control measures during construction or until final controls become effective.

1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Without limiting the generality of other requirements of these specifications, all work hereunder shall conform to the applicable requirements of the referenced portions of the following documents, to the extent that the requirements therein are not in conflict with the provisions of this Section.
 - 1. New Jersey Administrative Code
 - 2. Cape-Atlantic Soils Conservation District

1.03 EROSION AND SEDIMENTATION CONTROL DEVICES

- A. The following erosion and sedimentation control devices shall be incorporated into the work. Other devices, as necessary and acceptable to the Engineer shall be installed as required.
 - 1. Silt Fence shall be constructed at the locations shown on the Drawings, and at other locations indicated by the Engineer.

1.04 GUARANTEE

- A. All restoration and revegetation work shall be subject to the one-year guarantee period of the Contract as specified in the General Conditions.

PART 2- PRODUCTS

2.01 MATERIALS

- A. Materials for use in erosion and sedimentation control devices shall be in accordance with the requirements of the NJDEP and Cape-Atlantic Soil Conservation District.

2.02 SILT FENCE

- A. Silt Fence shall be a woven geotextile filter fabric made specifically for sediment control and shall conform NJDOT Specification Subsection 919.06. Filter fabric shall not rot when buried and shall resist attack from soil chemicals, alkalis and acids in the pH range from 2 to 13 and shall resist damage due to prolonged ultraviolet exposure. Filter fabric shall be Type FX-1 1, as manufactured by Cathage Mills, Geotex 91OSC as manufactured by Synthetic Industries, Inc.; Amoco 2130 as manufactured by Amoco Fabrics & Fibers Co., or equal.

2.03 SEEDING AND MULCHING

- A. Seeding and mulching, fertilization and watering shall be in accordance with Rules and Regulations of NJDEP and the Cape-Atlantic Soil Conservation District.
- B. Seeding shall be in accordance with NJDOT Specification Subsection 909.06.
- C. Mulching shall be in accordance with NJDOT Specification Subsection 909.04. Mulching binders shall be in accordance with NJDOT Specification Subsection 909.01.

2.04 PUMPED WATER FILTER BAGS

- A. Filter bags shall be made from non-woven geotextile material sewn with high strength double-stitched “J” type seams. They shall be capable of trapping particles larger than 150 microns.

PART 3 - EXECUTION

3.01 EROSION CONTROL

- A. Seeding: Seeding shall be in accordance with Section 808 of the NJDOT Specifications. The Contractor shall insure that all seeded areas have sustained growth prior to acceptance.
- B. Mulching.
 - 1. Mulching shall be in accordance with Section 811 of the NJDOT Specifications.
 - 2. Minimum procedures for mulching are:
 - a. Seeded areas shall be mulched within seven days.
 - b. Seeded areas shall be mulched with straw uniformly spread in a layer 1.0 to 1.5 inches thick, loose measurement.
 - c. Bind mulched surface in accordance with NJDOT Subsection 811.03.

3.02 SEDIMENTATION CONTROL

- A. Erosion and sedimentation control devices shall be established prior to or concurrent with the clearing operations in a given area. Where such practice is not feasible, the erosion

and sedimentation control device(s) shall be established immediately following completion of the clearing operation.

B. Silt fence shall be erected as shown on the Drawings and specified herein. Silt fence shall be erected and maintained to the satisfaction of the Engineer until a vegetative ground cover has been established. Replacement of the filter fabric, if required by the Engineer, will be at the Contractor's expense.

1. Silt fence shall be erected downstream from any construction work.

2. Upon completion of the project, the Contractor shall remove all silt fence in areas where a stand of grass has been established and erosion is no longer evident. Removal of the remainder of the silt fence shall occur as other areas are established. Removal of any silt fence shall be permitted only with the prior approval of the Engineer.

C. Pumped Water Filter Bags (if required)

1. Filter bags shall be located in well-vegetated areas and discharged onto stable, erosion resistant areas. Filter bags shall not be located on slopes greater than 5%.

2. Filter bags shall be inspected daily. When the filter bags are half full, they shall be emptied. If any problem is detected, pumping shall cease immediately and not resume until the problem is corrected. Spare bags shall be available for replacement of filled or failed bags.

3. Filter bags shall be connected to the pump discharge in accordance with the manufacturer's recommendations.

4. The pumping rate shall be no greater than 750 GPM or half of the maximum specified by the filter bag manufacturer, whichever is less.

5. Pumping intakes shall be screened.

3.03 PERFORMANCE

A. Should any of the temporary erosion and sediment control measures employed by the Contractor fail to produce results which comply with the requirements of the Owner, Contractor shall immediately take whatever steps are necessary to correct the deficiency at his own expense.

END OF SECTION

**SECTION 02500
SURFACE RESTORATION**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provide all labor, superintendence, materials, tools, transportation, and equipment and all means of construction necessary and reasonably incidental to complete the work as specified herein.
- B. Final restoration shall be undertaken as soon as an area is no longer needed for construction, stockpiling or access. Care should be taken to avoid damage to adjacent vegetation and to prevent the formation of depressions that would serve as mosquito pools. All applicable County and local standards are to be complied with.
- C. Work includes all labor, materials, and equipment to perform work required for final grading and complete surface restoration of all areas disturbed by the work of the Contract and as indicated on the Contract Drawings. This includes all work areas where excavation and backfill has occurred and is completed, and where material storage, construction traffic or other construction activities have disturbed the existing surface.
- D. The CONTRACTOR shall backfill and compact to restore original depth of topsoil, grades and match existing elevations. The top four (4) to six (6) inches of material in vegetated areas shall be topsoil from the stockpiled material.
- E. Concrete work shall be replaced to its original dimensions and as shown on the Contract Drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Backfill material to meet the required grades and elevations shall be supplied in accordance with Section 02230, Soil and Select Materials.
- B. Materials for landscaping shall be as approved by the ENGINEER and shall be the same type, species, etc. as were removed or damaged by the construction activities.
- C. Concrete for sidewalk repair shall be 4000 psi.

PART 3 - EXECUTION

3.01 WORKMANSHIP

- A. All work shall be performed by workmen skilled in their crafts following the best practices of the trade.
- B. The Contractor shall replace any concrete sidewalk removed for the installation of the new

pipng system by saw cutting at existing control joints, forming edges, and matching existing grades.

END OF SECTION

02500-2

**SECTION 03300
CAST-IN-PLACE CONCRETE**

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
 - 1. Slabs-on-grade.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, and grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Welding certificates.
- E. Qualification Data: For Installer
- F. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- G. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.

3. Form materials and form-release agents.
 4. Steel reinforcement and accessories.
 5. Curing compounds.
 6. Bonding agents.
 7. Adhesives.
 8. Vapor retarders.
 9. Semi rigid joint filler,
 10. Joint-filler strips.
 11. Repair materials.
- H. Field quality-control test and inspection reports.
1. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Testing Agency Qualifications: An independent agency qualified according to ASTM C1077 and ASTM E 329 for testing indicated, as documented according to ASTM B 548.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field-Testing Technician, Grade 1, according to ACI CP-0 1 or an equivalent certification program.
 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- E. Welding: Qualify procedures and personnel according to AWS D1.4, 'Structural Welding Code--Reinforcing Steel.
- F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
1. ACT 301, "Specification for Structural Concrete," Sections 1 through 5.

2. ACI 117, “Specifications for Tolerances for Concrete Construction and Materials.”
- G. Concrete Testing Service: Contractor shall engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- H. Pre-installation Conference: Conduct conference at Project site prior to concrete placement.
1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor’s superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
 2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

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

2.2 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
1. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

- a. Structural I, B-B or better; mill oiled and edge sealed,
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.
- E. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4-inch, minimum.
- F. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form—facing materials.
- G. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Wire: ASTM A 82, as drawn.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

2.4 REINFORCEMENT ACCESSORIES

- A. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, ASTM A 775/A 775M epoxy coated.
- B. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar

supports from steel wire, plastic, or precast concrete according to CRSJ's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.5 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 1. Portland Cement: ASTM C 150, Type I
- B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials,
 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable.

2.6 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water—soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- C. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C.
 1. Available Products:

- a. Euclid Chemical Company (The); EuconCIA.
 - b. Grace Construction Products, W. R. Grace & Co.; DCI.
 - c. Master Builders, Inc.; Rheocrete CNI.
 - d. Sika Corporation; Sika CNI.
- D. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective bather and minimizing chloride reactions with steel reinforcement in concrete.
- 1. Available Products:
 - a. Axim Concrete Technologies; Catexol I000CI.
 - b. Grace Construction Products, W. R. Grace & Co.; DCI-S.
 - c. Master Builders, Inc.; Rheocrete 222+.
 - d. Sika Corporation; FerroGard-90 1.

2.7 VAPOR RETARDERS

- A. Plastic Vapor Retarder: ASTM B 1745, Class C, or polyethylene sheet, ASTM D 4397, not less than 10 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.
- 1. Available Products:
 - a. Fortifiber Corporation; Moistop Plus.
 - b. Raven Industries Inc.; Dura Skrim 8.
 - c. Reef Industries, Inc.; Griffolyn Type-85.
 - d. Stego Industries, LLC; Stego Wrap, 10 mils.
- B. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
- C. Fine-Graded Granular Material: Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand; ASTM D 448, Size 10, with 100 percent passing a 3/8-inch sieve, 10 to 30 percent passing a No. 100 sieve, and at least 5 percent passing No. 200 sieve; complying with deleterious substance limits of ASTM C 33 for fine aggregates.

2.8 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- 1. Available Products:
 - a. Axim Concrete Technologies; Cimfilm.
 - b. Burke by Edoco; BurkeFilm.
 - c. ChemMasters; Spray-Film.

- d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Aquaftlm.
 - e. Euclid Chemical Company (The); Eucobar.
 - f. Kaufman Products, Inc.; Vapor Aid.
 - g. Lambert Corporation; Lambco Skin.
 - h. Meadows, W. R., Inc.; Sealtight Evapre.
 - i. Sika Corporation, Inc.; SikaFilm.
 - j. Symons Corporation; a Dayton Superior Company; Finishing Aid.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class 1, 18 to 25 percent solids, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
1. Available Products:
- a. Burke by Edoco; Spartan Cote WE 1120 Percent.
 - b. ChemMasters; Safe-Cure Clear.
 - c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; High Seal.
 - d. Euclid Chemical Company (The); Diamond Clear VOX.
 - e. Kaufman Products, Inc.; SureCure Emulsion.
 - f. Lambert Corporation; Glazccote Sealer-20.
 - g. L&M Construction Chemicals, Inc.; Dress & Sea! WE.
 - h. Meadows, W. R., Inc.; Vocomp-20.
 - i. Sonneborn, Div. of ChemRex; Kure-N-Seal.
 - j. Symons Corporation, a Dayton Superior Company; Cure & Seal 18 Percent E.
 - k. Tamms Industries, Inc.; Clearseal WE STD.

2.9 RELATED MATERIALS

- A. Expansion and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.
- C. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.10 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
 4. Compressive Strength: Not less than 4000psi at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
 4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.11 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 1. Fly Ash: 25 percent.
 2. Combined Fly Ash and Pozzolan: 25 percent.

3. Ground Granulated Blast-Furnace Slag: 50 percent.
 4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use high-range water-reducing admixture in concrete, as required, for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings, piers, and slabs on grade: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 4000 psi at 28 days unless otherwise specified on the engineering drawings.
 2. Maximum Water-Cementitious Materials Ratio: 0.48.
 3. Slump Limit: 8 inches for concrete with verified slump of 3 inches before adding high-range water-reducing admixture or plasticizing admixture plus or minus 1 inch.
 4. Air Content: 6 percent, plus or minus 1.0 percent at point of delivery

2.13 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.14 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

- B. Project-Site Mixing: Not Permitted.

PART 3 – EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or Gradual as follows:
 - 1. Class A, 1/8 inch for smooth-formed finished surfaces.
 - 2. Class C, 1/2 inch for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- F. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturers written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
 - 1. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Owner/Engineer.

3.4 VAPOR RETARDERS

- A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.
 - 1. Lap joints 6 inches and seal with manufacturers recommended tape.
- B. Bituminous Vapor Retarders: Place, protect, and repair vapor retarders according to manufacturer's written instructions.
- C. Granular Course: Cover vapor retarder with fine-graded granular material, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch.
 - 1. Place and compact a 1/2-inch- thick layer of fine-graded granular material over granular fill.

3.5 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder, Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
 1. Weld reinforcing bars according to AWS D1 .4, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Owner/Engineer.
 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 3. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 4. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades, Cut 1/8-inch- wide joints into

concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

- D. Isolation Joints in Slabs-on—Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
 - 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section ‘Joint Sealants,’ are indicated.
 - 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.7 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Owner/Engineer.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower

layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 2. Maintain reinforcement in position on chairs during concrete placement.
 - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 4. Slope surfaces uniformly to drains where required.
 - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

- F. Cold-Weather Placement: Comply with ACT 306. I and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

- G. Hot-Weather Placement: Comply with ACI 301 and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.8 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed—surface irregularities.

1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces exposed to public view.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.9 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1 R recommendations for screeding, restraighening, and finishing operations for concrete surfaces, Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth; granular texture.
1. Apply float finish to surfaces to receive trowel finish.
- C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Apply a trowel finish to surfaces exposed to view.
 2. Finish surfaces to the following tolerances, according to ASTM B 1155, for a randomly trafficked floor surface:
 - a. Specified overall values of flatness, F (F) 35; and of levelness, F (L) 25; with minimum local values of flatness, F (F) 24; and of levelness, F (L) 17; for slabs-on- grade.
- D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated. While concrete is still plastic, slightly scarify surface with a fine broom.
1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.

3.10 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as

specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

3.11 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturers written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.

- b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
- 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.
- 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.12 JOINTFILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. Defer joint filling until concrete has aged at least [one] month(s). Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and scalers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Owner/Engineer. Remove and replace concrete that cannot be repaired and patched to Owner/Engineer's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with

water, and brush- coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Owner/Engineer.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped, template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations, Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off

dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

- E. Perform structural repairs of concrete, subject to Owner/Engineer's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Owner/Engineer's approval.

3.14 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Contractor shall engage an independent OWNER approved testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Inspections:
 - 1. Steel reinforcement placement.
 - 2. Steel reinforcement welding.
 - 3. Headed bolts and studs.
 - 4. Verification of use of required design mixture.
 - 5. Concrete placement, including conveying and depositing.
 - 6. Curing procedures and maintenance of curing temperature.
 - 7. Verification of concrete strength before removal of shores and forms from beams and slabs.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof,
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 2. Slump: ASTM C 143/c 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each days pour of each concrete mixture.
4. Concrete Temperature; ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each days pour of each concrete mixture.
6. Compression Test Specimens: ASTM C 31/C 31 M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days, 14 days and 28 days intervals.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
10. Test results shall be reported in writing to Owner/Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Owner/Engineer but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive

strengths, or other requirements have not been met, as directed by Owner/Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.

13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 14. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.
- D. Measure floor and slab flatness and levelness according to ASTM F 1155 within 24 hours of finishing.

END OF SECTION

SECTION 13900
CLOSED LOOP GROUND HEAT EXCHANGER

PART 1 -GENERAL

1.1 SUMMARY

- A. Section includes the furnishing of all equipment, materials, and labor reasonably incidental to the complete operating installation of the closed-loop ground heat exchanger. This Section is part of the "Mechanical System" and is the responsibility of the Geothermal Contractor.
- B. The Contractor is responsible for securing all required drilling permits in the name of the Owner. The Contractor shall pay for all permitting costs.
- C. Description: The Work in this Section includes installation and testing of the vertical loops and horizontal part of the ground coupled heat exchanger. Included is the drilling of the vertical bore holes, installation of the piping, grouting, installation, and connection to the horizontal pipe headers, backfilling and pressure testing. The Work also includes flushing and purging of the complete piping system and charging the system with water and 20% ethanol anti-freeze. The closed-loop ground heat exchanger consists basically of polyethylene heat fusion joined piping formed into vertical or horizontal loops, to couple to the extended range water-source heat pump units to provide an ARI 330 ground source closed-loop heat pump system.
 - 1. Note: Contractor shall provide an allowance of a 50'-0" length of 6" steel casing per bore. If not utilized, Contractor shall credit to the Owner on a per linear foot basis.

1.2 REFERENCES

- A. American Society for Testing and Materials
 - 1. ASTM D1693 -Standard Test Method for Environmental Stress - Cracking of Ethylene Plastics.
 - 2. ASTM D2321 -Standard Practice for Underground Installation of Thermoplastic for Sewers and Other Gravity-Flow Applications.
 - 3. ASTM D2447- Standard Specification for Polyethylene (PE) Plastic Pipe Schedules 40 and 80 Based on Controlled Outside Diameter.
 - 4. ASTM D2487 -Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 5. ASTM D2513-OQ -Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings.
 - 6. ASTM D2683 -Standard Specification for Socket -Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing.
 - 7. ASTM D2837 -Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.

8. ASTM D3035-95 - Standard Specification for Polyethylene (PE) Plastic Pipe (DRPR) Based on Controlled Outside Diameter.
9. ASTM D3261 -Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
10. ASTM D3350 -Standard Specification for Polyethylene Plastic Pipe and Fittings Material.

1.3 SUBMITTALS

- A. Shop Drawings: Detailed 1/4-inch scale layout drawings and dimensions of the entire closed- loop ground heat exchanger including test bore (if applicable) and new bores showing all other existing underground utilities and relationship to new proposed borefield for coordination purposes. Include all horizontal piping, indoor headers and associated pipe, valve locations and header support details.
- B. Product Data: Submit manufacturer's product data and installation instructions for closed-loop ground heat exchanger piping, materials, products and the inground manifold vault.
- C. Manufacturer's Certificate: Pipe manufacturer shall supply a notarized document confirming compliance with the specifications of this Section.
- D. Warranty: Drilling and Looping Contractor must submit a two (2) year parts and labor warranty certificate covering all work performed.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: 1/4-inch scale record drawings and dimensions showing exact location of the entire closed-loop ground heat exchanger. Including all horizontal piping, vault (if applicable), valve locations and all pertinent data concerning the location in respect to building & underground utilities.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with New Jersey EPA and DEP standards.

1.6 QUALIFICATIONS

- A. Contractor: Firms regularly engaged in installation of closed-loop ground heat exchanger, and/or projects of similar scope of the type, material and size required; whose installations have been in satisfactory use in similar service for not less than five years. The contractor shall supply, with the bid, information on past jobs of similar scope. The following information must be supplied:
 1. Name of project/customer.
 2. Location of project.

3. Customer contact name (reference) with phone numbers.
 4. Project designer/engineer
 5. Date of installation.
 6. Number of wells.
 7. Depth of wells.
 8. Grout used.
- B. Manufacturer: Company specializing in manufacturing of closed-loop ground heat exchanger products and tools of the types, material and size required; whose products have been in satisfactory use in similar service for not less than three years.
- C. Installer: The Drilling Contractor shall be licensed in the State of New Jersey. Installers shall have at least two years of successful installation experience on projects with closed-loop ground heat exchanger work and/or projects of similar scope to that required for this project. Drilling Contractor must have experience at mixing and pumping pre-engineered cementitious grout materials with simultaneous placement of the pipe assembly and tremie tube from the bottom of the borehole to the top.
- D. Fabricator must have completed a certification training program offered by the International Ground Source Heat Pump Association (IGSHPA) or approved manufacturers' certification program and shall have at least two years of successful installation experience. The only acceptable method of joining buried plastic pipe system is by heat fusion process. Each ground heat exchanger fabricator must have performed a fusion procedure under direct supervision of an IGSHPA Certified Heat Fusion Technician, an IGSHPA approved manufacturer's certification program or a DOT certified heat fusion technician. Each certified technician must attend a retraining school annually.
- E. Manifolding Contractor must be a licensed Mechanical Contractor in New Jersey.

1.7 PRE-INSTALLATION CONFERENCE

- A. Convene with the Engineer, Mechanical Contractor and General Contractor a minimum of one week prior to commencing Work of this Section for a Pre-construction meeting.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Pipe, fittings, and cementitious grouting material shall be stored on site in designated area that will not interfere with the operations of the Owner.
- B. All pipe fittings are to be sealed to prevent debris, rodents, and other foreign material from entering the piping system.
- C. Palletized cementitious grouting materials are to be protected from the weather with a protective cover.

1.9 FIELD MEASUREMENTS

- A. It is the contractor's responsibility to call the New Jersey One Call System to determine if any existing underground utilities are located in the proposed area of the bore-field. The Contractor will coordinate with the Owner or Owner's representative to locate any "Customer/Owner" underground utilities not covered by the New Jersey One Call System. If any "marked" or located underground utilities are damaged during the test bore operation, it will be the Contractor's responsibility to properly repair and return the utility to service.
- B. Ensure the proper site protection is in place for the moving, setting up, operating and removal of the drill rig and other support vehicles or equipment, including protection of curbs and sidewalks, protection of existing trees, shrubs, and lawn. Contractor will inform the Owner of any obstacles to the drilling operation before actions are taken to remove obstacles.

1.10 WARRANTY

- A. Furnish minimum twenty-five-year warranty for piping system and five-year labor warranty.

PART 2 -PRODUCTS

2.1 CLOSED-LOOP GROUND HEAT EXCHANGER PIPING AND MATERIALS

- A. Manufacturers: High Density Polyethylene pipe (HDPE) shall be manufactured by NuMex Plastics, Phillips DriscoPlex, CSR Polypipe or approved equal.
- B. The only acceptable pipe and fittings material for the underground portion of the ground heat exchanger is high-density polyethylene. Specifications for the polyethylene heat exchanger are as follows:
 - 1. General: All pipe and heat-fused material shall be manufactured from virgin polyethylene extrusion compound material in accordance with ASTM D-2513, Sections 4.1 and 4.2. Pipe shall be manufactured to outside diameters, wall thickness and respective tolerances as specified in ASTM D3035-95 or D2447.
 - 2. Material:
 - a. The material shall maintain a 160 psi Hydrostatic Design Basis at 73.4 degrees F per ASTM D2837 and shall be listed in PPI TR4 as a PE3408 piping formulation. The material shall be a high-density extrusion compound having a minimum cell classification of PE345434C or higher as specified in ASTM D-3350 with the following exceptions: This material shall exhibit zero failure (Fa) when tested for a minimum of 192

hours under ASTM D-1693, condition C, as required in ASTM D3350.

- b. Fittings shall meet the requirements of ASTM D2683 (for socket fusion fittings) or ASTM D3261 (for butt/saddle fusion fittings).
3. Dimensions:
- a. Pipe with a diameter through 4-inch (nominal) shall only be manufactured in accordance with ASTM D3035 with a dimension ratio (DR) of 11.
 - b. Table of Water Pressure Rating at 73.4 degrees F for PE3408 Plastic Pipe:

Dimension Ratio	Pressure Rating (psi)
11	160
4. Markings: Sufficient information shall be permanently marked on the length of the pipe. The appropriate ASTM pipe standard defines this information. All fittings shall also be similarly marked. Marked information shall include:
- a. Manufacturer's name.
 - b. Nominal size.
 - c. Pressure rating.
 - d. Relevant ASTM standards.
 - e. Cell classification number.
 - f. Date of manufacture.
5. All piping used for the u-bend heat exchanger (pipe located in the borehole) will have factory hot-stamped lengths impressed on the side of the piping indicating the length of the heat exchanger to that point. The length shall read zero on the u-bend end and the actual heat exchanger total length on the other end.

2.2 PIPE JOINING METHODS

- A. The only acceptable method for joining the buried pipe system is by the heat fusion process. Joining shall be of the socket, butt, saddle fusion, or electro fusion methods in accordance with the pipe manufacturer's procedures.
- B. All fusion technicians shall be IGSHPA certified and properly trained and shall have executed quality fusion joints.

2.3 U-BEND/PIPE ASSEMBLY

- A. The u-bend fitting shall be injection molded from PE 3408 resin having a cell classification of 345444 with a UV stabilizer of C. U-bends constructed by fusing two 90-degree bends together shall not be allowed. The u-bends shall be factory butt fused to continuous lengths of SDR 11 pipe, which has been extruded from resin identical to the u-bend. The u-bend/pipe assembly shall have pipe lengths long enough to reach to final grade from the bottom of the bore so that no field fusion welds are required below the header pit elevation.

U-bend assemblies shall be factory pressure tested to 100 psi for a minimum of 5 minutes. On completion of testing, the pipe ends shall be immediately plugged to prevent foreign objects from entering the pipe.

2.4 EXISTING HEADER SYSTEM CONNECTION

- A. The Contractor shall tie into the existing header system inside the Administration Building as per the details included in the contract documents. New circulating piping shall be installed through existing core drilled holes within the basement walls.
- B. Piping: Construct of PE4710 high-density polyethylene SDR11 pipe having a cell classification of 445574C with a UV stabilizer of C. The circuit pipe is constructed in an offset, over and under, model for supply and return lines. All joints to be heat fused.
- C. Submittals: The Contractor shall submit a mechanical plan and section indicating the pipe circuit and header arrangements

2.5 THERMALLY ENHANCED CEMENTITIOUS GROUT

- A. Grout Submittals: The successful bidder must provide submittals for approval by the Owner/Engineer on the grout and grout equipment 15 days prior to beginning work.
- B. Grout Type: A Thermally enhanced cementitious grout shall be used to fill the annular space between the polyethylene pipe and the earth in all vertical well bores. The function of the grout is to facilitate the heat transfer between the u-loop and the surrounding earth formation while effectively sealing the borehole to prevent leakage of surface contaminants into the aquifers and/or cross-contamination between aquifers. The grout shall have a minimum thermal conductivity of 1.2 BTU/hr-FT-°F. No other backfill material shall be accepted. The grout shall be a cementitious-based grout, principally composed of two parts of finely graded silica quartz sand and one part Portland cement (Type I or Type II) and may contain a stabilizer admixture to enhance pumping properties and to control working time. The grout shall be pre-blended dry at the factory and delivered to the jobsite in sealed bags. No additives except water shall be added in the field. Thermally enhanced bentonite grout approved by NJDEP with a thermal conductivity greater than or equal to grout specified may be substituted.
- C. Grout Mixing: Use a continuous paddle-mixer to mix the grout; batch mixing of grout shall not be allowed. The maximum water content of the grout shall not exceed 17% by dry weight of the grout mix. The grout shall be mixed with a Continuous Grout Mixer having an on-board roto-meter to precisely control the amount of water added. The grout shall contain a suitable admixture to achieve a slump of 6 to 11 inches at 17% water content and shall exhibit an ASTM unconfined 28-day compressive strength greater than 3,000 psi. The mixed grout shall have a minimum specific gravity of 2.18 or density of 18.1 lbs/gallon. The grout must have a nominal thermal conductivity value of 1.2 Btu/hr-ft-degrees F or greater.
- D. Grout Placement: The boreholes shall be filled with grout throughout the entire depth

of the borehole by pumping the grout through a tremie pipe extending from the grout pump at the surface to the bottom of the borehole using a coil-tubing unit. Although the tremie pipe will be withdrawn from the borehole as the grout is being pumped, the tremie pipe discharge opening must always be kept at a level below the top of the rising grout. A pressure gauge must be installed on the tremie line to indicate the location of the tremie pipe discharge.

1. In the event that a geological formation is encountered that prevents the grouting material from forming a solid seal, either a 3/8 inch (9.5 mm) or 3/4 inch (19 mm) granular cementitious material may be used through that specific formation zone. Upon completion of that specific zone, the grout slurry shall continue to be used until reaching the surface of the vertical bore.
2. Grout type/manufacturer and percent solids shall be reported immediately to the engineer following bore completion.

2.6 TESTING AND DOCUMENTATION

- A. The Contractor shall provide a written description (drill log) of the subsurface geology encountered during the drilling operation by a visual inspection of the drill cuttings. Information provided shall include description of drill rig type and drill bit, drilling rates in feet per minute and types of formations. The Contractor shall provide this information for each change in geology for the entire depth of the bore hole and record the changes on the report worksheet.
- B. The Contractor shall advise the Owner/Engineer immediately in writing of the presence and depths of water, cavernous formations or any adverse drilling condition requiring casing of the bore hole. The contractor shall stop drilling operations until a response is received.
- C. Final Report shall be organized in a single document including the report worksheets and three copies shall be submitted to the Project Engineer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions under which ground heat exchanger test bore system is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Owner/ Engineer's recommendations.
- B. The Contractor shall provide temporary water tanks and temporary electrical power as may be required for completion of work.
- C. A water supply to fill temporary storage tanks is available on the ACUA Environmental Park Site (near the Transfer Station) at no additional cost to the contractor. Contractor responsible for filling.

3.2 INSTALLATION

A. Loop Insertion and Grouting

1. Drill borehole in accordance with local, State or Federal requirements. Follow all requirements for borehole drilling as prescribed by the State of New Jersey. The contractor will be responsible for receiving permission in writing from the State of New Jersey prior to proceeding and shall be responsible for maintaining any drilling logs that may be required.
2. The borehole shall be clean and of a maximum diameter listed on the test bore report worksheet to facilitate the installation of the u-bend assembly and a tremie pipe. Care shall be taken so as not to stretch, crush, cut, or kink the pipe during installation.
3. Immediately prior to being placed in the borehole, the u-bend assembly shall be flow tested to ensure that there are no kinks, bends, or pinches. The test shall consist of forcing clean water into one end of the assembly, and visually inspecting the discharge. If damage or an obstruction exists, that loop shall not be used.
4. If the driller has drilled deeper than indicated on the bore report worksheet, special precautions shall be taken so that the sealed pipe ends do not "drop" into the open borehole below graded surface. If a buoyant condition exists, the u-bend shall be staked and tied at the surface to prevent the assembly from "floating" out of the bore prior to the "setting" of the cementitious-based grout.
5. Prior to grouting, the u-bend assembly shall be pressurized with water to achieve a minimum internal pressure of 50 psi, and the ends shall be temporarily plugged to maintain this pressure. To prevent the collapse of the pipe resulting from the external force created by the grout's hydrostatic pressure, the pressure in the u-bend assembly shall be maintained until the grout has set.
6. Since some settling may occur after initial placement of the grout material, the installer shall monitor each test borehole and continue adding grout as required to bring the grout level up to the trench grade.
7. Borehole locations shall be individually surveyed after drilling is complete. The survey shall locate the test boreholes accurately from one or more known local survey benchmarks. The contractor shall furnish the Engineer/Owner a drawing indicating the test borehole locations.
8. At the conclusion of drilling operations, the Contractor shall remove all drill cuttings, spoils, and trash from the site.

9. The Contractor shall provide temporary metallic enclosure left at or above grade for protecting the heat exchanger piping. A dimensioned "as-drilled" location plan must be included in the final report.

B. Installation (Header Systems)

1. General: The horizontal ditches for the closed-loop ground heat exchanger header may be dug with a chain type trenching machine or a backhoe. Perform excavation of every description and of whatever substance encountered to the depths indicated on drawings. During excavation, deposit material suitable for backfill in an orderly manner, a sufficient distance from the excavation banks to avoid overloading and to prevent slides or cave-ins. Grade as necessary to prevent surface water from flowing into trenches or other excavations and remove water accumulating therein by pumping or other acceptable method. Unless otherwise indicated, excavation shall be by open cut. Keep banks of trenches and excavation for structures as nearly vertical as practicable and where required, properly sheet and brace. Fill unauthorized excavation below levels indicated for pipe with sand.
2. Trench Excavation: Excavate true to line to a depth to provide at least 4 feet above top of pipe and to provide clear space of not less than 6 inches on either side of pipe. Grade bottom of trenches accurately to provide uniform bearing and support for each section of pipe on 6 inches of sand along its entire length.
3. Shoring Requirements: Perform all shoring and sheeting that is required to protect the excavation and to safeguard employees in accordance with OSHA. Widen excavation to provide for space occupied by shoring and sheeting. Shoring shall meet the requirements of all applicable codes and regulations.
4. De-watering: Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding project site and surrounding area. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings and soil changes detrimental to stability of sub-grades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines and other de-watering system components necessary to convey water away from excavations. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rainwater and water removed from excavations to collecting or runoff areas. Do not use trench excavations as temporary ditches.
5. Connections:
 - a. Header pipes shall be installed and fusion connected to the vertical u-bend assembly. The pipe and fittings must be joined using the socket, saddle or electro fusion process. No other method is acceptable. The quantity of fusion joints in the system shall be kept to an absolute minimum. Reduction fittings shall be used at all pipe reductions to eliminate trapped air. Use reducing tees and pre-fabricated reducing type close headers. Consult pipe and/or fitting manufacturer for available fittings and headers.
 - b. Avoid sharp bends in piping runs. The minimum bend radius shall be determined by the following: Minimum Radius = Pipe O.D. (actual) x 25.

- c. Use only continuous lengths of pipe in bends. Install elbows fittings for required bends, which are tighter radii than calculated above.
 - d. Saddle fusions must be performed on a "bench type" fusion machine to control the fusion pressure during the process. No field saddle fusions will be accepted.
- 6. Testing: After headers have been laid in the trenches and prior to backfill, the system shall be pressurized with water and back-up air to a minimum of 100 psi with no loss of pressure for a minimum of thirty minutes. Each joint shall be visually and physically inspected, using industry standards, for cold joints. Any joints failing the test shall be completely removed from the system and a new joint or fitting installed with the test being repeated. Testing shall be witnessed by ACUA's Engineering representative.
 - 7. Backfill: Prepare dimensioned drawings of the complete ground heat exchanger piping system before backfilling. The trench shall be backfilled by hand with a minimum of 6 inches of sand or fine soil material on each side and on top of the pipes. A 14 Gauge (minimum) wire must be laid with all horizontal piping and a horizontal underground type metallic tracer warning tape shall be placed 12 inches to 18 inches below grade for the entire length of each header pipe. After piping is installed, tested, purged, inspected, and approved, the remaining trench fill may be excavated material, free of boulders, large rocks, general debris or foreign matter. Care shall be taken to avoid driving construction equipment over newly filled trenches unless bridging is provided to support load over trenches. Refer to ASTM 0-2321 for backfill procedures. Compact trenches to 90-95 percent dry density according to ASTM D.1557.
 - 8. Exterior Pipe Insulation: Where supply and return lines come within a 5-foot radius of either water lines and/or sewer lines, all lines shall be insulated with 1-inch closed-cell insulation until lines separate beyond the 5-foot distance. Adhesive backed insulation is desired.

3.3 ELAPSED TIME BEFORE TESTING

- A. AIR ROTARY DRILLING: A minimum delay of five days between loop grouting and testing is required.
- B. MUD ROTARY DRILLING: A minimum delay of three days between loop grouting and testing is required.

3.4 TESTING AND DOCUMENTATION

- A. All circuits of closed loop ground heat exchanger (excluding existing main headers in building) shall be pressure tested (using the hydrostatic pressure test method II) to 130 PSI. For 24 hours the testing agency shall then drop the pressure to 80 PSI and take pressure readings as follows:
 - 1. 5 readings at 2-minute intervals.
 - 2. 5 readings at 4-minute intervals.

3. 6 readings at 10-minute intervals.

All testing shall be witnessed by the ACUA's Engineering Representative. The testing agency shall submit graph plots of the results of the test to the Engineer.

3.5 FIELD QUALITY CONTROL

- A. Before backfilling the test bores, they shall be flushed and purged of air and flow tested to ensure all portions of the closed-loop ground heat exchanger test bores are properly flowing. A portable temporary purging unit shall be utilized and shall consist of the following:
 1. Purge pump; high volume and high head.
 2. Open reservoir.
 3. Filter assembly with by-pass.
 4. Pressure gage.
 5. Connecting piping.
 6. Connecting hoses
 7. Flow meter.
- B. Using the purging unit described above, flush and purge each section free of air, dirt, and debris. A minimum velocity of 2 feet per second in each piping section must be maintained for a minimum of fifteen minutes to remove all air. A change of more than 1 inch in the level of fluid in the purge pump tank during pressurization indicates air still trapped in the system. The flushing and purging operation shall be conducted with the supply and return lines to the building capped and sealed at the flange termination connection within the building. Supply and return lines to the building shall be filled as full as possible with water. Building mechanical contractor will be responsible for flushing and purging the interior portion of the system and a final purging of the entire system as they are completely responsible for the operation of the entire system.
- C. Utilizing the purging unit, conduct a pressure and flow test on the ground heat exchanger to ensure the system is free of blockage. If the flow test indicates blockage, locate blockage using manufacturer's recommendation, remove blockage, then re-purge and conduct the pressure and flow test again until all portions of the system are flowing properly. The flow test must be observed and approved by the Owner/Engineer or his designate before the system is to be considered completed.
- D. Flushing & Purging: Before the system is placed in operation velocity flushing of all ground heat exchanger piping shall be performed to remove debris. Flushing shall be performed at a velocity no less than 125% of design flow, but in no case less than 2 FPS. A closed loop flush skid shall be utilized with removable strainers of a fine mesh wire (40 mesh). The flush shall be considered complete when no less than 20 volumes have recirculated through the system without cleaning required in the strainers. Air separators may be used to aid in the removal of air during the process. Flushing shall be performed for each vertical bore before connection to the lateral header. Vertical piping ends shall be sealed after flushing until lateral connections are made. Final

flush/purge shall be completed after connection to lateral piping and before backfilling. This shall be performed in the presence of the Engineers or Owner's Representative. **PROVIDE 24 HOUR WRITTEN NOTICE TO THE ENGINEER.**

3.6 FINISH GRADE PREPARATION

- A. Perform all grading necessary to bring site to required sub-finished elevations as indicated on contract drawings. Grading shall consist of preparing area for topsoil by General Contractor. Do not start work until underground utilities are completely installed and heavy hauling finished.

- B. After completion and approval of finish grading, coordinate with General Contractor for removal of any excess topsoil from site.

END OF SECTION

**SECTION 15185
HYDRONIC PUMPS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Close-coupled, in-line centrifugal pumps.
 - 2. Close-coupled, base-mounted, end-suction centrifugal pumps.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of pump.
 - 1. Performance data.
 - 2. Motor data.
- B. Shop Drawings: For each pump.
 - 1. Show pump layout and connections.
 - 2. Include setting drawings with templates for installing foundation and anchor bolts and other anchorages.
 - 3. Include diagrams for power, signal, and control wiring.

1.3 LEED Submittals:

- A. Not Used.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance manuals.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of hydronic pumps that fails in materials or workmanship within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CLOSE-COUPLED, END-SUCTION CENTRIFUGAL PUMPS

- A. Manufacturers:
1. Bell & Gossett; Div. of ITT Industries.
 2. TACO.
 3. Armstrong.
 4. Grundfos Pump Corporation / PACO.
 5. Or approved equal.
- B. Description: Factory-assembled and -tested, centrifugal, overhung-impeller, close-coupled, end-suction pump as defined in HI 1.1-1.2 and HI 1.3; designed for installation with pump and motor shafts mounted horizontally. Rate pump for 125-psig minimum working pressure and a continuous water temperature of 225 deg F.
- C. Pump Construction:
1. Casing: Radially split, cast iron, with replaceable bronze wear rings, drain plug at bottom and air vent at top of volute, threaded gage tapping's at inlet and outlet, and flanged connections.
 2. Impeller: ASTM B 584, cast bronze; statically and dynamically balanced, keyed to shaft, and secured with a locking cap screw. Trim impeller to match specified performance.
 3. Pump Shaft: Steel, with copper-alloy shaft sleeve.
 4. Mechanical Seal: Carbon rotating ring against a ceramic seat held by a stainless-steel spring, and Buna-N bellows and gasket. Include water slinger on shaft between motor and seal.
 5. Pump Bearings: Permanently lubricated ball bearings.
 6. Motor: Variable speed, inverter-duty with permanently lubricated ball bearings, unless otherwise indicated; rigidly mounted to pump casing with integral pump support. Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."
- D. Capacities and Characteristics:
1. Minimum Pump capacity of 200 gpm @ 160 feet T.D.H.

2.2 PUMP SPECIALTY FITTINGS

- A. Suction Diffuser: Angle pattern, 175-psig pressure rating, cast-iron body and end cap, pump-inlet fitting; with bronze startup and bronze or stainless-steel permanent strainers; bronze or stainless-steel straightening vanes; drain plug; and factory-fabricated support.
- B. Triple-Duty Valve: Angle or straight pattern, 175-psig pressure rating, cast-iron body, pump-discharge fitting; with drain plug and bronze-fitted shutoff, balancing, and check valve features. Brass gage ports with integral check valve, and orifice for flow measurement.

PART 3 - EXECUTION

3.1 PUMP INSTALLATION

- A. Comply with HI 1.4.
- B. Install pumps to provide access for periodic maintenance including removing motors, impellers, couplings, and accessories.
- C. Independently support pumps and piping so weight of piping is not supported by pumps and weight of pumps is not supported by piping.
- D. Suspend vertically mounted, in-line centrifugal pumps independent of piping. Install pumps with motor and pump shafts vertical. Use continuous-thread hanger rods and spring hangers with vertical-limit stop of sufficient size to support pump weight.
- E. Equipment Mounting: Install base-mounted pumps on cast-in-place concrete equipment bases. Comply with requirements for equipment bases specified in Division 03 Section "Cast-in-Place Concrete."
 - 1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 - 2. Construct bases to withstand, without damage to equipment, seismic force required by code.
 - 3. Construct concrete bases 4 inches high and extend base not less than 6 inches in all directions beyond the maximum dimensions of base-mounted pumps unless otherwise indicated or unless required for seismic-anchor support.
 - 4. Minimum Compressive Strength: 4000 psi at 28 days.

3.2 ALIGNMENT

- A. Perform alignment service.
- B. Comply with requirements in Hydronics Institute standards for alignment of pump and motor shaft. Add shims to the motor feet and bolt motor to base frame. Do not use grout between motor feet and base frame.
- C. Comply with pump and coupling manufacturers' written instructions.
- D. After alignment is correct, tighten foundation bolts evenly but not too firmly. Completely fill baseplate with nonshrink, nonmetallic grout while metal blocks and shims or wedges are in place. After grout has cured, fully tighten foundation bolts.

3.3 CONNECTIONS

- A. Where installing piping adjacent to pump, allow space for service and maintenance.
- B. Install fittings, valves and strainers and instrumentation as indicated on drawings.
- C. Connect piping to pumps. Install valves that are same size as piping connected to pumps.
- D. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.

- E. Install check, shutoff, and throttling valves on discharge side of pumps.
- F. Install Y-type strainer, suction diffuser and shutoff valve on suction side of pumps.
- G. Install pressure gages on pump suction and discharge or at integral pressure-gage tapping or install single gage with multiple-input selector valve.
- H. Ground equipment according to "Grounding and Bonding for Electrical Systems."
- I. Connect wiring according to "Low-Voltage Electrical Power Conductors and Cables."

3.4 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
 - 1. Complete installation and startup check according to manufacturer's written instructions.
 - 2. Check piping connections for tightness.
 - 3. Clean strainers on suction piping.
 - 4. Perform the following startup checks for each pump before starting:
 - a. Verify bearing lubrication.
 - b. Verify that pump is free to rotate by hand and that pump for handling hot liquid is free to rotate with pump hot and cold. If pump is bound or drags, do not operate until cause of trouble is determined and corrected.
 - c. Verify that pump is rotating in the correct direction.
 - 5. Prime pump by opening suction valves and closing drains and prepare pump for operation.
 - 6. Start motor.
 - 7. Open discharge valve slowly.
- B. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance. Training for hydronic pumps shall be included for a total of 1 hour; (1) 1-hour session.

END OF SECTION