FINANCE COMMITTEE
MARCH 20, 2019

ROLL CALL

PUBLIC COMMENT

COMMUNICATIONS

From: Dan Kookken, Purchasing Manager
Re: Library Courtyard Renovation (Value $104,000); Department: 181, Community Development
Fund: General Escrows

From: Dan Kookken, Purchasing Manager
Re: Aquatic Invasive Species Control and Management (Value $65,713); Department: 181,
Community Development; Fund: General Escrows

From: Dan Kookken, Purchasing Manager
Re: Purchase of Two (2) 2019 Ford Transit Cargo Vans (Value: $57,857); Department: 191 School
Fund: CERF

From: Dan Kookken, Purchasing Manager
Re: 2019 Asphalt Testing (Value: $48,600); Department: 160, Admin/Engineering; Fund: Bond

From: Dan Kookken, Purchasing Manager
Re: Wet Weather Facility Screening Upgrade – Design and Bidding Phase (Value: Not-To-Exceed
$178,000); Department: 169 Wastewater; Fund: Wastewater

From: Dan Kookken, Purchasing Manager
Re: Casella Recycling, LLC Contract Change Order #1 (Value: $120,000); Department: 168, Solid
Waste; Fund: Solid Waste

From: Dan Kookken, Purchasing Manager
Re: Phase III Landfill Construction Quality Assurance Services (Value: $255,000); Department: 168
Solid Waste; Fund: Bond

From: Dan Kookken, Purchasing Manager
Re: Phase III Landfill Construction (Value: $5,525,525); Department: 168 Solid Waste; Fund: Bond

UNFINISHED BUSINESS – None

NEW BUSINESS – None

RECORD OF EXPENDITURES

GENERAL DISCUSSION

PUBLIC COMMENT

REMARKS BY THE ALDERMEN

POSSIBLE NON-PUBLIC SESSION

ADJOURNMENT
March 14, 2019
Memo #19-130

TO: MAYOR DONCHESS
FINANCE COMMITTEE

SUBJECT: LIBRARY COURTYARD RENOVATION (VALUE $104,000)
DEPARTMENT: 181 COMMUNITY DEVELOPMENT; FUND: GENERAL ESCROWS

Please see attached communication from Sarah Marchant, Community Development Division Director, dated March 7, 2019 for information related to this contract award.

§ 5-83. Professional services. In the purchase of accounting, architectural, auditing, engineering, legal, medical and ambulance services and purchases of independent professional consultant services for personnel, data processing, actuarial, planning, management and other comparable purchases competitive bidding shall not be required. Competitive bidding is required in the procurement of insurance agents and consultants.

The Community Development Division Director and the Purchasing Department recommend the award of this contract to CRJA-IBI Consulting Services of Boston, MA in an amount of $104,000.

Respectfully,

Dan Koken
Purchasing Manager

Cc: S. Marchant J. Graziano
Date: March 7, 2019

To: John Griffin, CFO; Daniel Kookan, Purchasing Manager

From: Sarah Marchant, Director Community Development Division

Re: Contract for Landscape Architectural Services for Renovation of the Library Courtyard

The Community Development Division in partnership with the Library issued RFP 0269-012219 to request proposals for design, engineering, and construction monitoring for the creation of an innovative courtyard renovation to be completed the summer of 2020 for the multilevel plaza area between the Library building and the adjacent city-owned building at 14 Court Street. We received 5 proposals from CRJA-IBI, AECOM, Halvorson Design, TFM Design and Urban Associates.

A committee including Mayor Jim Donchess, Library Director Jennifer McCormack, Operations Manager Mike Harris, and Sarah Marchant from City Staff and Marylou Blaisdell, Paul Shea, Lisa Bissonnette, and Gail Moriarty from the community, reviewed the proposals and evaluated each proposal based on the following criteria: 1. Qualifications and experience of project team, 2. Past performance and service on similar projects, 3. Proposed approach to scope of work, 4. Overall quality of proposal, 5. Cost.

CRJA-IBI was chosen unanimously for their comprehensive proposal including design, public process participation with 3-D views of proposed designs, professional civil and irrigation personnel, relevant experience, focus on accessibility, phased design to allow project to stay on budget and full construction monitoring included in proposal.

The Community Development Division recommends awarding the contract for renovation of the Library Courtyard space to CRJA-IBI Consulting Services in the amount of $104,000.
CONTRACT FOR PROFESSIONAL SERVICES

ENGINEERING SERVICES FOR LIBRARY COURTYARD RENOVATION FOR DOWNTOWN RIVERFRONT

A CONTRACT BETWEEN

THE CITY OF NASHUA, 229 MAIN STREET, NASHUA, NH 03061-2019

AND

IBI Group, a California Partnership, 21 CUSTOM HOUSE STREET, BOSTON, MA 02110

and its successors, transferees and assignees (together “Professional Engineer”)

WHEREAS, the City of Nashua, a political subdivision of the State of New Hampshire, from time to time requires the services of a Professional Engineer; and

WHEREAS, it is deemed that the services of Professional Engineer herein specified are both necessary and desirable and in the best interests of the City of Nashua; and

WHEREAS, IBI Group, a California Partnership and the Team represented in the Response to RFP#0269-012219 are duly qualified, equipped, staffed, ready, willing and able to perform and render the services hereinafter described;

NOW, THEREFORE, in consideration of the agreements herein made, the parties mutually agree as follows:

1. DOCUMENTS INCORPORATED. The following exhibits are by this reference incorporated herein and are made part of this contract:

Exhibit A--General Conditions for Contracts
Exhibit B--Scope of Services, Contract Time, Fee Schedule

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, proposals, representations or agreements, either written or oral. Any other documents which are not listed in this Article are not part of the Contract.

In the event of a conflict between the terms of the Proposal and the terms of this Agreement, a written change order and/or fully executed City of Nashua Purchase Order, the terms of this Agreement, the written change order or the fully executed City of Nashua Purchase Order shall control over the terms of the Proposal.

2. WORK TO BE PERFORMED Except as otherwise provided in this contract, Professional Engineer shall furnish all services, equipment, and materials and shall perform all operations necessary and required to carry out and perform in accordance with the terms and conditions of the contract the work described.
3. PERIOD OF PERFORMANCE. Professional Engineer shall perform and complete all work within the time
periods set forth and may only be altered by the parties by a written agreement to extend the period of
performance or by termination in accordance with the terms of the contract. Professional Engineer shall
begin performance upon receipt of an Executed Contract and a valid Purchase Order issued from the City
of Nashua.

4. COMPENSATION. Professional Engineer agrees to perform the work for a total cost not to exceed

Dollars ($ 104,000 )

which, unless otherwise provided in this contract, shall be paid in accordance with the provisions of
Exhibit B or unless Professional Engineer has received a written exemption from the City of Nashua.
Professional Engineer shall submit monthly requests for payment for services performed under this
agreement directly to

City of Nashua
Attn: Accounts Payable
PO Box 2019
Nashua, NH 03061-2019

To facilitate the proper and timely payment of applications, the City of Nashua requires that all
invoices contain a valid PURCHASE ORDER NUMBER.

Requests for payment shall be submitted no later than fifteen (15) days after the end of each month and
must include a detailed summary of the expenditures reported in a form that supports the approved budget.
Specifically, Professional Engineer agrees to provide the following with each request for payment:

1. Appropriate invoice forms. The forms shall include the project purchase order number, a listing
   of personnel hours and billing rates, and other expenditures for which payment is sought.

2. A progress report. The report shall include, for each monthly reporting period, a description of
   the work accomplished, problems experienced, upcoming work, any extra work carried out, and a
   schedule showing actual expenditures billed for the period, cumulative total expenditures billed
   and paid to date under the contract, and a comparison of cumulative total expenditures billed and
   paid to the approved budget.

The City of Nashua will pay for work satisfactorily completed by Professional Engineer. The City of
Nashua will pay Professional Engineer within 30 days of approval by the City of Nashua of the submitted
invoice forms and progress reports. The City of Nashua will make no payments until the invoice forms and
progress reports have been submitted and approved.

5. EFFECTIVE DATE OF CONTRACT. This contract shall not become effective until and unless approved
   by the City of Nashua.

6. NOTICES. All notices, requests, or approvals required or permitted to be given under this contract shall
   be in writing, shall be sent by hand delivery, overnight carrier, or by United States mail, postage prepaid,
   and registered or certified, and shall be addressed to:

CITY OF NASHUA REPRESENTATIVE: CRJA-IBI REPRESENTATIVE:

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Community Development Division
Sarah Marchant, Director
229 Main Street, PO Box 2019
Nashua, NH 03060

IBI Group, a California Partnership
Catherine Offenberg, Principal In Charge
21 Custom House Street
Boston, MA 02110

Any notice required or permitted under this contract, if sent by United States mail, shall be deemed to be given to and received by the addressee thereof on the third business day after being deposited in the mail. The City of Nashua or Professional Engineer may change the address or representative by giving written notice to the other party.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be signed and intend to be legally bound thereby.

City of Nashua, NH (signature)  
James Donchess, Mayor  
(Printed Name and Title)  
Date

IBI Group (signature)  
Catherine Offenberg, Principal  
(Printed Name and Title)  
Date

Christopher M. Jones, Principal  
Date

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EXHIBIT A
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GENERAL CONDITIONS

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General Terms and Conditions

1. **Definitions** Unless otherwise required by the context, "Professional Engineer", and its successors, transferees and assignees (together “Professional Engineer") includes any of the Professional Engineer's consultants, sub consultants, contractors, and subcontractors.

2. **Professional Engineer Status** The parties agree that Professional Engineer shall have the status of and shall perform all work under this contract as a Professional Engineer, maintaining control over all its consultants, sub consultants, contractors, or subcontractors. The only contractual relationship created by this contract is between the City of Nashua and Professional Engineer, and nothing in this contract shall create any contractual relationship between the City of Nashua and Professional Engineer's consultants, sub consultants, contractors, or subcontractors. The parties also agree that Professional Engineer is not a City of Nashua employee and that there shall be no:

   (1) Withholding of income taxes by the City of Nashua;
   (2) Industrial insurance coverage provided by the City of Nashua;
   (3) Participation in group insurance plans which may be available to employees of the City of Nashua;
   (4) Participation or contributions by either the Professional Engineer or the City of Nashua to the public employee’s retirement system;
   (5) Accumulation of vacation leave or sick leave provided by the City of Nashua;
   (6) Unemployment compensation coverage provided by the City of Nashua.

3. **Standard of Care** Professional Engineer shall be responsible for the professional quality, technical accuracy, completion in accordance with a mutually agreed upon schedule, and coordination of all work performed under this contract. Professional Engineer warrants that all work shall be performed with the degree of professional skill, care, diligence, and sound practices and judgment that are normally exercised by recognized professional firms with respect to services of a similar nature. It shall be the duty of Professional Engineer to assure at its own expense that all work is technically sound and in conformance with all applicable federal, state, and local laws, statutes, regulations, ordinances, orders, or other requirements. In addition to all other rights which the City of Nashua may have, Professional Engineer shall, at its own expense and without additional compensation, re-perform work to correct or revise any deficiencies, omissions, or errors in the work or the product of the work or which result from Professional Engineer's failure to perform in accordance with this standard of care. Any approval by the City of Nashua of any products or services furnished or used by Professional Engineer shall not in any way relieve Professional Engineer of the responsibility for professional and technical accuracy and adequacy of its work. City of Nashua review, approval, or acceptance of, or payment for any of Professional Engineer's work under this contract shall not operate as a waiver of any of the City of Nashua's rights or causes of action under this contract, and Professional Engineer shall be and remain liable in accordance with the terms of the contract and applicable law.

Professional Engineer shall furnish competent and skilled personnel to perform the work under this contract. The City of Nashua reserves the right to approve key personnel assigned by Professional Engineer to perform work under this contract. Approved key personnel shall not be taken off of the project by Professional Engineer without the prior written approval of the City of Nashua, except in the event of termination of employment. Professional Engineer shall, if requested to do so by the City of Nashua, remove from the job any personnel whom the City of Nashua determines to be incompetent, dishonest, or uncooperative.
4. **CITY OF NASHUA REPRESENTATIVE** The City of Nashua may designate a City of Nashua representative for this contract. If designated, all notices, project materials, requests by Professional Engineer, and any other communication about the contract shall be addressed or be delivered to the City of Nashua Representative.

5. **CHANGES TO SCOPE OF WORK** The City of Nashua may, at any time, by written order, make changes to the general scope, character, or cost of this contract and in the services or work to be performed, either increasing or decreasing the scope, character, or cost of Professional Engineer's performance under the contract. Professional Engineer shall provide to the City of Nashua within 10 calendar days, a written proposal for accomplishing the change. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Professional Engineer should proceed with any or all of the proposed change. If the change causes an increase or a decrease in Professional Engineer's cost or time required for performance of the contract as a whole, an equitable adjustment shall be made and the contract accordingly modified in writing. Any claim of Professional Engineer for adjustment under this clause shall be asserted in writing within 30 days of the date the City of Nashua notified Professional Engineer of the change.

When Professional Engineer seeks changes, Professional Engineer shall, before any work commences, estimate their effect on the cost of the contract and on its schedule and notify the City of Nashua in writing of the estimate. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Professional Engineer should proceed with any or all of the proposed change.

Except as provided in this paragraph, Professional Engineer shall implement no change unless the City of Nashua in writing approves the change. Unless otherwise agreed to in writing, the provisions of this contract shall apply to all changes. The City of Nashua may provide verbal approval of a change when the City of Nashua, in its sole discretion, determines that time is critical or public health and safety are of concern. Any verbal approval shall be confirmed in writing as soon as practicable. Any change undertaken without prior City of Nashua approval shall not be compensated and is, at the City of Nashua's election, sufficient reason for contract termination.

6. **CITY OF NASHUA COOPERATION** The City of Nashua agrees that its personnel will cooperate with Professional Engineer in the performance of its work under this contract and that such personnel will be available to Professional Engineer for consultation at reasonable times and after being given sufficient advance notice that will prevent conflict with their other responsibilities. The City of Nashua also agrees to provide Professional Engineer with access to City of Nashua records in a reasonable time and manner and to schedule items that require action by the Board of Public Works and Finance Committee in a timely manner. The City of Nashua and Professional Engineer also agree to attend all meetings called by the City of Nashua or Professional Engineer to discuss the work under the Contract, and that Professional Engineer may elect to conduct and record such meetings and shall later distribute prepared minutes of the meeting to the City of Nashua.

7. **DISCOVERY OF CONFLICTS, ERRORS, OMISSIONS, AMBIGUITIES, OR DISCREPANCIES** Professional Engineer warrants that it has examined all contract documents, has brought all conflicts, errors, discrepancies, and ambiguities to the attention of the City of Nashua in writing, and has concluded that the City of Nashua's resolution of each matter is satisfactory to Professional Engineer. All future questions Professional Engineer may have concerning interpretation or clarification of this contract shall be submitted in writing to the City of Nashua within 10 calendar days of their arising. The writing shall state clearly and in full detail the basis for Professional Engineer's question or position. The City of Nashua representative shall render a
decision within 15 calendar days. The City of Nashua's decision on the matter is final. Any work affected by a conflict, error, omission, or discrepancy which has been performed by Professional Engineer prior to having received the City of Nashua's resolution shall be at Professional Engineer's risk and expense. At all times, Professional Engineer shall carry on the work under this contract and maintain and complete work in accordance with the requirements of the contract or determination of the City of Nashua. Professional Engineer is responsible for requesting clarification or interpretation and is solely liable for any cost or expense arising from its failure to do so.

8. **TERMINATION OF CONTRACT**

**A. TERMINATION, ABANDONMENT, OR SUSPENSION AT WILL.** The City of Nashua, in its sole discretion, shall have the right to terminate, abandon, or suspend all or part of the project and contract at will. If the City of Nashua chooses to terminate, abandon, or suspend all or part of the project, it shall provide Professional Engineer 10 day’s written notice of its intent to do so.

If all or part of the project is suspended for more than 90 days, the suspension shall be treated as a termination at will of all or part of the project and contract.

Upon receipt of notice of termination, abandonment, or suspension at will, Professional Engineer shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Place no further orders or subcontracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.
3. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the City of Nashua of all orders or subcontracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the City of Nashua any orders or subcontracts specified in the notice, and revoke agreements specified in the notice.
4. Not resume work after the effective date of a notice of suspension until receipt of a written notice from the City of Nashua to resume performance.

In the event of a termination, abandonment, or suspension at will, Professional Engineer shall receive all amounts due and not previously paid to Professional Engineer for work satisfactorily completed in accordance with the contract prior to the date of the notice and compensation for work thereafter completed as specified in the notice. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work.

**B. TERMINATION FOR CAUSE** This agreement may be terminated by the City of Nashua on 10 calendar day’s written notice to Professional Engineer in the event of a failure by Professional Engineer to adhere to any or all the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the City of Nashua, to complete or make sufficient progress on the work in a timely and professional manner. Professional Engineer shall be given an opportunity for consultation with the City of Nashua prior to the effective date of the termination. Professional Engineer may terminate the contract on 10 calendar days written notice if, through no fault of Professional Engineer, the City of Nashua fails to pay Professional Engineer for 45 days after the date of approval by the City of Nashua of any Application for Payment.

Upon receipt of notice of termination for cause, Professional Engineer shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Provide the City of Nashua with a list of all unperformed services.
3. Place no further orders or sub-contracts for materials, services, or facilities, other than 
as may be necessary or required for completion of such portion of work under the 
contract that is not terminated.
4. Immediately make every reasonable effort to obtain cancellation upon terms 
satisfactory to the City of Nashua of all orders or sub contracts to the extent they relate 
to the performance of work terminated, abandoned, or suspended under the notice, 
assign to the City of Nashua any orders or sub contracts specified in the notice, and 
revoke agreements specified in the notice.
5. Not resume work after the effective date of a notice of termination unless and until 
receipt of a written notice from the City of Nashua to resume performance.

In the event of a termination for cause, Professional Engineer shall receive all amounts due and 
not previously paid to Professional Engineer for work satisfactorily completed in accordance with 
the contract prior to the date of the notice, less all previous payments. No amount shall be 
allowed or paid for anticipated profit on unperformed services or other unperformed work. Any 
such payment may be adjusted to the extent of any additional costs occasioned to the City of 
Nashua by reasons of Professional Engineer's failure. Professional Engineer shall not be relieved 
of liability to the City of Nashua for damages sustained from the failure, and the City of Nashua 
may withhold any payment to the Professional Engineer until such time as the exact amount of 
damages due to the City of Nashua is determined. All claims for payment by the Professional 
Engineer must be submitted to the City of Nashua within 30 days of the effective date of the 
otice of termination.

If after termination for the failure of Professional Engineer to adhere to any of the terms and 
conditions of the contract or for failure to satisfactorily, in the sole opinion of the City of Nashua, 
complete or make sufficient progress on the work in a timely and professional manner, it is 
determined that Professional Engineer had not so failed, the termination shall be deemed to have 
been a termination at will. In that event, the City of Nashua shall, if necessary, make an 
adjustment in the compensation paid to Professional Engineer such that Professional Engineer 
receives total compensation in the same amount as it would have received in the event of a 
termination-at-will.

C. GENERAL PROVISIONS FOR TERMINATION Upon termination of the contract, the City of 
Nashua may take over the work and prosecute it to completion by agreement with another party 
or otherwise. In the event Professional Engineer shall cease conducting business, the City of 
Nashua shall have the right to solicit applications for employment from any employee of the 
Professional Engineer assigned to the performance of the contract. Neither party shall be considered in default of the performance of its obligations hereunder to the 
extent that performance of such obligations is prevented or delayed by any cause, existing or 
future, which is beyond the reasonable control of such party. Delays arising from the actions or 
inactions of one or more of Professional Engineer's principals, officers, employees, agents, 
subcontractors, consultants, vendors, or suppliers are expressly recognized to be within 
Professional Engineer's control.

9. DISPUTE RESOLUTION The parties shall attempt to resolve any dispute related to this contract 
as follows. Either party shall provide to the other party, in writing and with full documentation to 
verify and substantiate its decision, its stated position concerning the dispute. No dispute shall be 
considered submitted and no dispute shall be valid under this provision unless and until the 
submitting party has delivered the written statement of its position and full documentation to the 
other party. The parties shall then attempt to resolve the dispute through good faith efforts and 
negotiation between the City of Nashua Representative and a Professional Engineer 
Representative. At all times, Professional Engineer shall carry on the work under this contract 
and maintain and complete work in accordance with the requirements of the contract or 
determination or direction of the City of Nashua. If the parties are unable to resolve their dispute
as described above within 30 days, if requested in writing by either the City of Nashua or the Professional Engineer, the parties shall attempt to resolve the dispute, by entering in structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by the agreement of the parties. If the dispute cannot be settled within a period of thirty (30) calendar days with the mediator the parties’ reserve the right to pursue any available legal and/or equitable remedies for any breaches of this contract except as that right may be limited by the terms of this contract.

10. **NO DAMAGES FOR DELAY** Apart from a written extension of time, no payment, compensation, or adjustment of any kind shall be made to Professional Engineer for damages because of hindrances or delays in the progress of the work from any cause, and Professional Engineer agrees to accept in full satisfaction of such hindrances and delays any extension of time that the City of Nashua may provide.

11. **INSURANCE** Professional Engineer shall carry and maintain in effect during the performance of services under this contract:

- General Liability insurance in the amount of $1,000,000 per occurrence; $2,000,000 aggregate;
- $1,000,000 Combined Single Limit Automobile Liability;
  *Coverage must include all owned, non-owned and hired vehicles.*
- $1,000,000 Profession Liability;
- and Workers’ Compensation Coverage in compliance with the State of New Hampshire statutes, $100,000/$500,000/$100,000.

Professional Engineer shall maintain in effect at all times during the performance under this contract all specified insurance coverage with insurers. None of the requirements as to types and limits to be maintained by Professional Engineer are intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Professional Engineer under this contract. The City of Nashua shall not maintain any insurance on behalf of Professional Engineer. Professional Engineer shall require Subcontractors to carry appropriate and lawful amounts of insurance for the services they are providing. Professional Engineer will ensure compliance with this section and shall receive valid certificates of insurance from all Subcontractors as proof that coverage is in place.

Professional Engineer will provide the City of Nashua with certificates of insurance for coverage as listed below and endorsements affecting coverage required by the contract within ten calendar days after the City of Nashua issues the notice of award. The City of Nashua requires thirty days written notice of cancellation or material change in coverage. The certificates and endorsements for each insurance policy must be signed by a person authorized by the insurer and who is licensed by the State of New Hampshire. **General Liability and Auto Liability policies must name the City of Nashua as an additional insured** and reflect on the certificate of insurance. Professional Engineer is responsible for filing updated certificates of insurance with the City of Nashua’s Risk Management Department during the life of the contract.

- All deductibles and self-insured retentions shall be fully disclosed in the certificate(s) of insurance.
- If aggregate limits of less than $2,000,000 are imposed on bodily injury and property damage, Professional Engineer must maintain umbrella liability insurance of at least $1,000,000. All aggregates must be fully disclosed on the required certificate of insurance.
- The specified insurance requirements do not relieve Professional Engineer of its responsibilities or limit the amount of its liability to the City of Nashua or other
persons, and Professional Engineer is encouraged to purchase such additional insurance, as it deems necessary.

- The insurance provided herein is primary, and no insurance held or owned by the City of Nashua shall be called upon to contribute to a loss.
- Professional Engineer is responsible for and required to remedy all damage or loss to any property, including property of the City of Nashua, caused in whole or part by Professional Engineer or anyone employed, directed, or supervised by Professional Engineer.

12. **INDEMNIFICATION** Regardless of any coverage provided by any insurance, Professional Engineer agrees to indemnify and shall hold harmless the City of Nashua, its officials, employees and authorized representatives and their employees from and against any and all actions, legal or administrative proceedings, arbitrations, damages, liabilities, interest, reasonable attorney’s fees, costs and expenses of any kind or nature in any manner caused, occasioned, or contributed by reason of any negligent act, omission, or fault or willful misconduct, whether active or passive, of Professional Engineer or of anyone acting under its direction or control or on its behalf in connection with or incidental to the performance of this contract. Professional Engineer’s indemnity and hold harmless obligations, or portions thereof, shall not apply to liability caused by the sole negligence or willful misconduct of the party indemnified or held harmless. Notwithstanding the above, under no circumstances shall Professional Engineer be responsible for the negligence or intentional acts of City of Nashua.

13. **FISCAL CONTINGENCY** All payments under this contract are contingent upon the availability to the City of Nashua of the necessary funds. This contract shall terminate and the City of Nashua's obligations under it shall be extinguished at the end of any fiscal year in which the City of Nashua fails to appropriate monies for the ensuing fiscal year sufficient for the performance of this contract.

Nothing in this contract shall be construed to provide Professional Engineer with a right of payment over any other entity. Any funds obligated by the City of Nashua under this contract that are not paid to Professional Engineer shall automatically revert to the City of Nashua’s discretionary control upon the completion, termination, or cancellation of the agreement. The City of Nashua shall not have any obligation to re-award or to provide, in any manner, the unexpended funds to Professional Engineer. Professional Engineer shall have no claim of any sort to the unexpended funds.

The City of Nashua shall provide notice to Professional Engineer in the event the City of Nashua fails to appropriate funds, and in such event Professional Engineer’s obligations under the contract shall immediately cease, except for completion of any services paid in advance if any.

14. **COMPENSATION** Review by the City of Nashua of Professional Engineer's submitted monthly invoice forms and progress reports for payment will be promptly accomplished by the City of Nashua. If there is insufficient information, the City of Nashua may require Professional Engineer to submit additional information. Unless the City of Nashua, in its sole discretion, decides otherwise, the City of Nashua shall pay Professional Engineer in full within **30 days of approval** of the submitted monthly invoice forms and progress reports.

15. **COMPLIANCE WITH APPLICABLE LAWS** Professional Engineer, at all times, shall fully and completely comply with all applicable local, state and federal laws, statutes, regulations, ordinances, orders, or requirements of any sort in carrying out the obligations of this contract, including, but not limited to, all federal, state, and local accounting procedures and requirements, all immigration and naturalization laws, and the Americans With Disabilities Act. Professional Engineer shall, throughout the period services are to be performed under this contract, monitor for any changes to the applicable laws, statutes, regulations, ordinances, orders, or requirements,
shall promptly notify the City of Nashua in writing of any changes to the same relating to or affecting this contract, and shall submit detailed documentation of any effect of the change in terms of both time and cost of performing the contract.

16. NONDISCRIMINATION If applicable or required under any federal or state law, statute, regulation, order, or other requirement, Professional Engineer agrees to the following terms. Professional Engineer will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. Professional Engineer agrees to take affirmative action to employ, advance in employment, or to otherwise treat qualified, handicapped individuals without discrimination based upon physical or mental handicap in all employment practices, including but not limited to the following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, rates of pay, or other forms of compensation and selection for training, including apprenticeship.

Without limitation of the foregoing, Professional Engineer's attention is directed to “Title 41” Public Contracts and Property Management” C.F.R. Subtitle B “Other Provisions Relating to Public Contracts” Section 60 “Office of Federal Contract Compliance Programs, Equal Employment, Department of Labor” which, by this reference, is incorporated in this contract.

Professional Engineer agrees to assist disadvantaged business enterprises in obtaining business opportunities by identifying and encouraging disadvantaged suppliers, consultants, and sub consultants to participate to the extent possible, consistent with their qualification, quality of work, and obligation of Professional Engineer under this contract.

In connection with the performance of work under this contract, Professional Engineer agrees not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, or sexual orientation. This agreement includes, but is not 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.

Professional Engineer agrees, if applicable, to insert these provisions in all subcontracts, except for subcontracts for standard commercial supplies or raw materials. Any violation of any applicable provision by Professional Engineer shall constitute a material breach of the contract.

17. ENDORSEMENT Professional Engineer shall seal and/or stamp and sign professional documents including drawings, plans, maps, reports, specifications, and other instruments of service prepared by Professional Engineer or under its direction as required under the laws of the State of New Hampshire.

18. ASSIGNMENT, TRANSFER, DELEGATION, OR SUBCONTRACTING Professional Engineer shall not assign, transfer, delegate, or subcontract any rights, obligations, or duties under this contract without the prior written consent of the City of Nashua. Any such assignment, transfer, delegation, or subcontracting without the prior written consent of the City of Nashua is void. Any consent of the City of Nashua to any assignment, transfer, delegation, or subcontracting shall only apply to the incidents expressed and provided for in the written consent and shall not be deemed to be a consent to any subsequent assignment, transfer, delegation, or subcontracting. Any such assignment, transfer, delegation, or subcontract shall require compliance with or shall incorporate all terms and conditions set forth in this agreement, including all incorporated Exhibits and written amendments or modifications. Subject to the foregoing provisions, the contract inures to the benefit of, and is binding upon, the successors and assigns of the parties.
19. **CITY INSPECTION OF CONTRACT MATERIALS** The books, records, documents and accounting procedures and practices of Professional Engineer related to this contract shall be subject to inspection, examination and audit by the City of Nashua, including, but not limited to, the contracting agency, the Board of Public Works, Corporation Counsel, and, if applicable, the Comptroller General of the United States, or any authorized representative of those entities.

20. **DISPOSITION OF CONTRACT MATERIALS** Any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials, including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Professional Engineer in the performance of its obligations under this contract shall be the exclusive property of the City of Nashua and all such materials shall be remitted and delivered, at Professional Engineer’s expense, by Professional Engineer to the City of Nashua upon completion, termination, or cancellation of this contract. Alternatively, if the City of Nashua provides its written approval to Professional Engineer, any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Professional Engineer in the performance of its obligations under this contract must be retained by Professional Engineer for a minimum of four years after final payment is made and all other pending matters are closed. If, at any time during the retention period, the City of Nashua, in writing, requests any or all of the materials, then Professional Engineer shall promptly remit and deliver the materials, at Professional Engineer's expense, to the City of Nashua. Professional Engineer shall not use, willingly allow or cause to have such materials used for any purpose other than the performance of Professional Engineer's obligations under this contract without the prior written consent of the City of Nashua.

21. **PUBLIC RECORDS LAW, COPYRIGHTS, AND PATENTS** Professional Engineer expressly agrees that all documents ever submitted, filed, or deposited with the City of Nashua by Professional Engineer (including those remitted to the City of Nashua by Professional Engineer pursuant to paragraph 20), unless designated as confidential by a specific statute of the State of New Hampshire, shall be treated as public records and shall be available for inspection and copying by any person, or any governmental entity.

   No books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Professional Engineer in the performance of its obligations under this contract shall be the subject of any application for a copyright or patent by or on behalf of Professional Engineer. The City of Nashua shall have the right to reproduce any such materials.

   Professional Engineer agrees to indemnify and to hold harmless the City of Nashua, its representatives, and employees from any claim or action seeking to impose liability, costs, and reasonable attorney fees incurred as a result of or in connection with any claim, whether rightful or otherwise, that any material prepared by or supplied to Professional Engineer infringes any copyright or that any equipment, material, or process (or any part thereof) specified by Professional Engineer infringes any patent.

   Professional Engineer shall have the right, in order to avoid such claims or actions, to substitute at its expense non-infringing materials, concepts, products, or processes, or to modify such infringing materials, concepts, products, or processes so they become non-infringing, or to obtain the necessary licenses to use the infringing materials, concepts, products, or processes, provided that such substituted or modified materials, concepts, products, or processes shall meet all the requirements and be subject to all the terms and conditions of this contract.
22. **FINAL ACCEPTANCE**  Upon completion of all work under the contract, Professional Engineer shall notify the City of Nashua in writing of the date of the completion of the work and request confirmation of the completion from the City of Nashua. Upon receipt of the notice, the City of Nashua shall confirm to Professional Engineer in writing that the whole of the work was completed on the date indicated in the notice or provide Professional Engineer with a written list of work not completed. With respect to work listed by the City of Nashua as incomplete, Professional Engineer shall promptly complete the work and the final acceptance procedure shall be repeated. The date of final acceptance of a project by the City of Nashua shall be the date upon which the Board of Public Works or other designated official accepts and approves the notice of completion.

23. **TAXES**  Professional Engineer shall pay all taxes, levies, duties, and assessments of every nature due in connection with any work performed under the contract and make any and all payroll deductions required by law. The contract sum and agreed variations to it shall include all taxes imposed by law. Professional Engineer hereby indemnifies and holds harmless the City of Nashua from any liability on account of any and all such taxes, levies, duties, assessments, and deductions.

24. **NON-WAIVER OF TERMS AND CONDITIONS**  None of the terms and conditions of this contract shall be considered waived by the City of Nashua. There shall be no waiver of any past or future default, breach, or modification of any of the terms and conditions of the contract unless expressly stipulated to by the City of Nashua in a written waiver.

25. **RIGHTS AND REMEDIES**  The duties and obligations imposed by the contract and the rights and remedies available under the contract shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

26. **PROHIBITED INTERESTS**  Professional Engineer shall not allow any officer or employee of the City of Nashua to have any indirect or direct interest in this contract or the proceeds of this contract. Professional Engineer warrants that no officer or employee of the City of Nashua has any direct or indirect interest, whether contractual, noncontractual, financial or otherwise, in this contract or in the business of Professional Engineer. If any such interest comes to the attention of Professional Engineer at any time, a full and complete disclosure of the interest shall be immediately made in writing to the City of Nashua. Professional Engineer also warrants that it presently has no interest and that it will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. Professional Engineer further warrants that no person having such an interest shall be employed in the performance of this contract. If City of Nashua determines that a conflict exists and was not disclosed to the City of Nashua, it may terminate the contract at will or for cause in accordance with paragraph 8.

In the event Professional Engineer (or any of its officers, partners, principals, or employees acting with its authority) is convicted of a crime involving a public official arising out or in connection with the procurement of work to be done or payments to be made under this contract, City of Nashua may terminate the contract at will or for cause in accordance with paragraph 8. Upon termination, Professional Engineer shall refund to the City of Nashua any profits realized under this contract, and Professional Engineer shall be liable to the City of Nashua for any costs incurred by the City of Nashua in completing the work described in this contract. At the discretion of the City of Nashua, these sanctions shall also be applicable to any such conviction obtained after the expiration or completion of the contract.

Professional Engineer warrants that no gratuities (including, but not limited to, entertainment or gifts) were offered or given by Professional Engineer to any officer or employee of the City of Nashua with a view toward securing a contract or securing favorable treatment with respect to the
awarding or amending or making of any determinations with respect to the performance of this contract. If City of Nashua determines that such gratuities were or offered or given, it may terminate the contract at will or for cause in accordance with paragraph 8.

The rights and remedies of this section shall in no way be considered for be construed as a waiver of any other rights or remedies available to the City of Nashua under this contract or at law.

27. **Third Party Interests and Liabilities** The City of Nashua and Professional Engineer, including any of their respective agents or employees, shall not be liable to third parties for any act or omission of the other party. This contract is not intended to create any rights, powers, or interest in any third party and this agreement is entered into for the exclusive benefit of the City of Nashua and Professional Engineer.

28. **Survival of Rights and Obligations** The rights and obligations of the parties that by their nature survive termination or completion of this contract shall remain in full force and effect.

29. **Severability** In the event that any provision of this contract is rendered invalid or unenforceable by any valid act of Congress or of the New Hampshire legislature or any court of competent jurisdiction, or is found to be in violation of state statutes or regulations, the invalidity or unenforceability of any particular provision of this contract shall not affect any other provision, the contract shall be construed as if such invalid or unenforceable provisions were omitted, and the parties may renegotiate the invalid or unenforceable provisions for sole purpose of rectifying the invalidity or unenforceability.

30. **Modification of Contract and Entire Agreement** This contract constitutes the entire contract between the City of Nashua and Professional Engineer. The parties shall not be bound by or be liable for any statement, representation, promise, inducement, or understanding of any kind or nature not set forth in this contract. No changes, amendments, or modifications of any terms or conditions of the contract shall be valid unless reduced to writing and signed by both parties.

31. **Choice of Law and Venue** This contract shall be governed exclusively by the laws of the State of New Hampshire and any claim or action brought relating to this contract, the work performed or contracted to be performed thereunder, or referable in any way thereto shall be brought in Hillsborough County (New Hampshire) Superior Court Southern Judicial District or in the New Hampshire 9th Circuit Court—Nashua and not elsewhere.

Neither the City of Nashua nor Professional Engineer shall be liable to the other or shall make any claim for any incidental, indirect or consequential damages arising out of or connected to this contract or the performance of the services on this project. This mutual waiver includes, but is not limited to, damages related to loss of use, loss of profits, loss of income, unrealized energy savings, diminution of property value or loss of reimbursement or credits from governmental or other agencies.
Exhibit B
Scope of Work

The project scope consists of 4 phases that will ultimately produce a detailed landscaping design and construction plans that can be put out to bid in the fall/winter of 2019, for construction in 2020 for the Library Courtyard located between the Library parking lot, 14 Court Street, Court Street and the Library building.

Once implemented, the renovated courtyard will provide a quality, cost-effective, and low-maintenance beautiful space for the community to enjoy daily active programming of events and activities, connect City buildings and the riverfront. The plan should provide improved public safety, highlight the connectivity and provide active outdoor passive recreation and event space.

Scope includes 4 phases:

SCHEMATIC DESIGN PHASE
Deliverables:
- Attend one (1) project kick-off meeting with the City and library staff
- Produce two (2) rendered masterplan design alternatives for the site
- Production of 3D visualizations: up to ten views (10)
- Attend two (2) meetings with the City, library staff and steering committee
- Attend two (2) public meetings to present design ideas
- Production of site amenities image boards
- Site sections
- Cost estimating
- Production of a rendered preferred alternative design with accompanying 3D visualizations
- Project team coordination
- Project administration

CONSTRUCTION DOCUMENTS PHASE
Deliverables:
- Attend two (2) progress meetings with the City and library staff
- Existing Conditions Plan
- Site Preparation and Demolition Plan
- Grading Plan
- Planting Plan
- Materials and Layout Plan
- Civil Engineering Plan and Details
- Electrical Plan and Details
- Lighting Plan
- Landscape Site Details
- Technical Specifications
- Performance Specification for Irrigation Design
- New Water Tap Plan
- Irrigation Details
- One submission at 50%
- One submission at 100%
- Coordination meetings via conference call as needed
- Cost Estimating
BIDDING PHASE
Deliverables:
• Attend one (1) pre bid conference
• Assist with the bidding process, including clarifications to bidders, and
• review of bid submissions
• Prepare one (1) Addenda
• Respond to contractor questions

CONSTRUCTION ADMINISTRATION PHASE 1
Deliverables:
• Attend sixteen (16) site visits to review construction and meet with the City and contractor
• Civil Engineer to attend two (2) site meetings
• Irrigation consultant to attend (2) site meetings
• Electrical Engineer to attend (2) site meetings
• Produce meeting minutes from weekly site visit
• Process contractor payment requests
• One (1) Plant tagging trip to a local nursery
• Review submittals
• Preparation of SK’s and RFI’s
• Field notes
• Final site review and Punch List

EXCLUSIONS AND ASSUMPTIONS
• We assume the Construction Documents will be complete by July 2019 with the first phase of
  construction completed by the end of November 2019. We have made the following additional
  assumptions:
  o Permitting is not included
  o Remediation of any hazardous/toxic materials is not included
  o City to provide general conditions specifications sections
  o Signage and wayfinding is not included
  o Fountains, water features and pools will not be included in the design per the direction
    of the City.

FEE SCHEDULE

<table>
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<tr>
<th>PHASE</th>
<th>FEE</th>
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<tr>
<td>LANDSCAPE ARCHITECTURE SERVICES</td>
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<tr>
<td>Schematic Design</td>
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<tr>
<td>Construction Documents</td>
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<tr>
<td>Bidding</td>
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<td>Construction Administration</td>
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<td>TOTAL</td>
<td>$104,000</td>
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</tbody>
</table>

Exhibit B
March 14, 2019
Memo #19-131

TO: MAYOR DONCHESS
FINANCE COMMITTEE

SUBJECT: AQUATIC INVASIVE SPECIES CONTROL AND MANAGEMENT (VALUE $65,713)
DEPARTMENT: 181 COMMUNITY DEVELOPMENT; FUND: GENERAL ESCROWS

Please see attached communication from Sarah Marchant, Community Development Division Director, dated February 28, 2019 for information related to this contract award.

Pursuant to § 5-84 Special purchase procedures A. (4) Sole-source procurements, where the proposed purchase is manufactured by only one company.

The Waterways Department and the Purchasing Department recommend the award of this contract to Solitude Lake Management of Shrewsbury, MA in an amount of $65,713.

Respectfully,
Dan Kooker
Purchasing Manager

Cc: S. Marchant J. Graziano
Date: February 28, 2019
To: John Griffin, CFO; Daniel Kookan, Purchasing Manager
From: Deb Chisholm, Waterways Manager
Re: Contract for Aquatic Invasive Species Control and Management

Nuisance aquatic invasive plants are present in multiple Nashua water bodies, most notably the Nashua River upstream of Mine Falls dam, the Mill Pond, and Nashua Canal. During summer 2017 the City also received several complaints regarding excessive plant growth in Sandy Pond and the Waterways Manager documented that Curly Leaf Pondweed, an aquatic invasive species, was present in this pond. Aquatic invasive weeds, such as milfoil, fanwort, and water chestnut, can make rivers and ponds unsightly, recreation unpleasant, and navigation by boat difficult. Furthermore, excessive growth of vegetation can impair water quality due to reduced dissolved oxygen which can cause fish kills.

The City’s Waterways Manager works closely with the State Invasive Species Coordinator at NH DES to monitor the presence and extent of invasive species and update the Long-term Exotic Aquatic Plant Management Plan for our waterways.

The City has been involved in controlling aquatic invasive species since 2011 when action was taken to control Water Chestnut by mechanical harvest. This was very effective at removing Water Chestnut and we now can continue to control Water Chestnut by hand pulling with volunteers. Unfortunately, the decline in Water Chestnut created an opportunity for other invasive species present in the River to take over. The vegetation is now dominated by milfoil and fanwort which cannot be mechanically harvested or hand pulled, leaving herbicide treatment as the only recommended effective management strategy. Herbicide treatments in rivers and ponds are closely regulated and permitted which involves extensive public notice.

Herbicide treatments, which take place every other year, have been used in the Mill Pond and Nashua Canal to control primarily milfoil and fanwort since 2012. Herbicide treatments cannot eradicate these plants therefore, continued periodic herbicide treatments are necessary to knock back the growth of these invasive species.

During the summers of 2017 and 2018, herbicide treatments were used to control milfoil and fanwort on 84 acres of the Nashua River upstream of the Mine Falls dam. This resulted in a very noticeable improvement over 2016 conditions and we received multiple messages from constituents reporting they were pleased with this outcome. Herbicide treatments are recommended again this summer to continue reducing the coverage and extent of these invasive species in this section of the Nashua River.
In response to complaints about the excessive plant and algae growth in Sandy Pond we will continue taking action to control curly leaf pond weed and reduce nuisance algae to improve the appearance and water quality of this pond.

Solitude Lake management is the only company in the region that provides this type of service, and in accordance with the NH DES invasive species management grant program, we solicited a proposal directly from them to complete the recommended management actions for the Nashua River, and Sandy Pond. The City was awarded a grant from NH DES in the amount of $15,573 and Resolution R-19-108 has been recommended by the Human Affairs Committee and is pending final approval. The total cost for this contract is $65,713 which will be paid in part by the NH DES grant with remaining cost covered by Community Development (Nashua River) and the Parks and Recreation Department (Sandy Pond).

The Waterways Department recommends awarding the contract for aquatic invasive species control in the Nashua River to Solitude Lake Management in the amount of $65,713, pending Board of Aldermen approval of Resolution R-19-108.
AQUATIC INVASIVE SPECIES CONTROL AND MANAGEMENT IN THE NASHUA RIVER

A CONTRACT BETWEEN

THE CITY OF NASHUA, 229 MAIN STREET, NASHUA, NH 03061-2019

AND

SOLITUDE LAKE MANAGEMENT, 590 LAKE STREET SHREWSBURY, MA 01545

and its successors, transferees and assignees (together “Independent Contractor”)

WHEREAS, the City of Nashua, a political subdivision of the State of New Hampshire, from time to time requires the services of an Independent Contractor; and

WHEREAS, it is deemed that the services of an Independent Contractor herein specified are both necessary and desirable and in the best interests of the City of Nashua; and

WHEREAS, Independent Contractor represents they are duly qualified, equipped, staffed, ready, willing and able to perform and render the services hereinafter described;

NOW, THEREFORE, in consideration of the agreements herein made, the parties mutually agree as follows:

1. DOCUMENTS INCORPORATED. The following exhibits are by this reference incorporated herein and are made part of this contract:

   Exhibit A--General Conditions for Contracts
   Exhibit B--Scope of Services, Contract Time, Fee Schedule

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, proposals, representations or agreements, either written or oral. Any other documents which are not listed in this Article are not part of the Contract.

In the event of a conflict between the terms of the Proposal and the terms of this Agreement, a written change order and/or fully executed City of Nashua Purchase Order, the terms of this Agreement, the written change order or the fully executed City of Nashua Purchase Order shall control over the terms of the Proposal.

2. WORK TO BE PERFORMED Except as otherwise provided in this contract, Independent Contractor shall furnish all services, equipment, and materials and shall perform all operations necessary and required to carry out and perform in accordance with the terms and conditions of the contract the work described.
3. **PERIOD OF PERFORMANCE.** Independent Contractor shall perform and complete all work within the time periods set forth and may only be altered by the parties by a written agreement to extend the period of performance or by termination in accordance with the terms of the contract. Independent Contractor shall begin performance upon receipt of an Executed Contract and a valid Purchase Order issued from the City of Nashua.

4. **COMPENSATION.** Independent Contractor agrees to perform the work for a total cost not to exceed

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<tr>
<th>Sixty-five thousand seven hundred and thirteen</th>
<th>Dollars ($)</th>
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<td>$65,713.00</td>
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which, unless otherwise provided in this contract, shall be paid in accordance with the provisions of Exhibit B or unless Independent Contractor has received a written exemption from the City of Nashua. Independent Contractor shall submit monthly requests for payment for services performed under this agreement directly to

City of Nashua  
Attn: Accounts Payable  
PO Box 2019  
Nashua, NH 03061-2019

To facilitate the proper and timely payment of applications, the City of Nashua requires that all invoices contain a valid PURCHASE ORDER NUMBER.

Requests for payment shall be submitted no later than fifteen (15) days after the end of each month and must include a detailed summary of the expenditures reported in a form that supports the approved budget. Specifically, Independent Contractor agrees to provide the following with each request for payment:

1. Appropriate invoice forms. The forms shall include the project purchase order number, a listing of personnel hours and billing rates, and other expenditures for which payment is sought.

2. A progress report. The report shall include, for each monthly reporting period, a description of the work accomplished, problems experienced, upcoming work, any extra work carried out, and a schedule showing actual expenditures billed for the period, cumulative total expenditures billed and paid to date under the contract, and a comparison of cumulative total expenditures billed and paid to the approved budget.

The City of Nashua will pay for work satisfactorily completed by Independent Contractor. The City of Nashua will pay Independent Contractor within 30 days of approval by the City of Nashua of the submitted invoice forms and progress reports. The City of Nashua will make no payments until the invoice forms and progress reports have been submitted and approved.

5. **EFFECTIVE DATE OF CONTRACT.** This contract shall not become effective until and unless approved by the City of Nashua.

6. **NOTICES.** All notices, requests, or approvals required or permitted to be given under this contract shall be in writing, shall be sent by hand delivery, overnight carrier, or by United States mail, postage prepaid, and registered or certified, and shall be addressed to:
CITY OF NASHUA REPRESENTATIVE:  
Mayor Jim Donchess  
229 Main Street, PO Box 2019  
Nashua, NH 03060  

With Copy to  
Deb Chisholm  
Waterways Manager  
229 Main Street, PO Box 2019  
Nashua, NH 03060  

REPRESENTATIVE:  
Marc D. Bellaud  
Solitude Lake Management  
590 Lake Street  
Shrewsbury, MA 01545  

Any notice required or permitted under this contract, if sent by United States mail, shall be deemed to be given to and received by the addressee thereof on the third business day after being deposited in the mail. The City of Nashua or Independent Contractor may change the address or representative by giving written notice to the other party.  

IN WITNESS WHEREOF, the parties hereto have caused this contract to be signed and intend to be legally bound thereby.  

_________________________  
City of Nashua, NH (signature)  

_________________________  
Solitude Lake Management (signature)  

_________________________  
James Donchess, Mayor  
(Printed Name and Title)  

_________________________  
(Printed Name and Title)  

_________________________  
Date  

_________________________  
Date
## Exhibit A
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General Terms and Conditions

1. **Definitions** Unless otherwise required by the context, "Independent Contractor", and its successors, transferees and assignees (together "Independent Contractor") includes any of the Independent Contractor's consultants, sub consultants, contractors, and subcontractors

2. **Independent Contractor Status** The parties agree that Independent Contractor shall have the status of and shall perform all work under this contract as a Independent Contractor, maintaining control over all its consultants, sub consultants, contractors, or subcontractors. The only contractual relationship created by this contract is between the City of Nashua and Independent Contractor, and nothing in this contract shall create any contractual relationship between the City of Nashua and Independent Contractor's consultants, sub consultants, contractors, or subcontractors. The parties also agree that Independent Contractor is not a City of Nashua employee and that there shall be no:

   (1) Withholding of income taxes by the City of Nashua;
   (2) Industrial insurance coverage provided by the City of Nashua;
   (3) Participation in group insurance plans which may be available to employees of the City of Nashua;
   (4) Participation or contributions by either the Independent Contractor or the City of Nashua to the public employee’s retirement system;
   (5) Accumulation of vacation leave or sick leave provided by the City of Nashua;
   (6) Unemployment compensation coverage provided by the City of Nashua.

3. **Standard Of Care** Independent Contractor shall be responsible for the professional quality, technical accuracy, timely completion, and coordination of all work performed under this contract. Independent Contractor warrants that all work shall be performed with the degree of professional skill, care, diligence, and sound practices and judgment that are normally exercised by recognized professional firms with respect to services of a similar nature. It shall be the duty of Independent Contractor to assure at its own expense that all work is technically sound and in conformance with all applicable federal, state, and local laws, statutes, regulations, ordinances, orders, or other requirements. In addition to all other rights which the City of Nashua may have, Independent Contractor shall, at its own expense and without additional compensation, re-perform work to correct or revise any deficiencies, omissions, or errors in the work or the product of the work or which result from Independent Contractor's failure to perform in accordance with this standard of care. Any approval by the City of Nashua of any products or services furnished or used by Independent Contractor shall not in any way relieve Independent Contractor of the responsibility for professional and technical accuracy and adequacy of its work. City of Nashua review, approval, or acceptance of, or payment for any of Independent Contractor's work under this contract shall not operate as a waiver of any of the City of Nashua's rights or causes of action under this contract, and Independent Contractor shall be and remain liable in accordance with the terms of the contract and applicable law.

Independent Contractor shall furnish competent and skilled personnel to perform the work under this contract. The City of Nashua reserves the right to approve key personnel assigned by Independent Contractor to perform work under this contract. Approved key personnel shall not be taken off of the project by Independent Contractor without the prior written approval of the City of Nashua, except in the event of termination of employment. Independent Contractor shall, if requested to do so by the City of Nashua, remove from the job any personnel whom the City of Nashua determines to be incompetent, dishonest, or uncooperative.
4. **CITY OF NASHUA REPRESENTATIVE** The City of Nashua may designate a City of Nashua representative for this contract. If designated, all notices, project materials, requests by Independent Contractor, and any other communication about the contract shall be addressed or be delivered to the City of Nashua Representative.

5. **CHANGES TO SCOPE OF WORK** The City of Nashua may, at any time, by written order, make changes to the general scope, character, or cost of this contract and in the services or work to be performed, either increasing or decreasing the scope, character, or cost of Independent Contractor's performance under the contract. Independent Contractor shall provide to the City of Nashua within 10 calendar days, a written proposal for accomplishing the change. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Independent Contractor should proceed with any or all of the proposed change. If the change causes an increase or a decrease in Independent Contractor's cost or time required for performance of the contract as a whole, an equitable adjustment shall be made and the contract accordingly modified in writing. Any claim of Independent Contractor for adjustment under this clause shall be asserted in writing within 30 days of the date the City of Nashua notified Independent Contractor of the change.

When Independent Contractor seeks changes, Independent Contractor shall, before any work commences, estimate their effect on the cost of the contract and on its schedule and notify the City of Nashua in writing of the estimate. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Independent Contractor should proceed with any or all of the proposed change.

Except as provided in this paragraph, Independent Contractor shall implement no change unless the City of Nashua in writing approves the change. Unless otherwise agreed to in writing, the provisions of this contract shall apply to all changes. The City of Nashua may provide verbal approval of a change when the City of Nashua, in its sole discretion, determines that time is critical or public health and safety are of concern. Any verbal approval shall be confirmed in writing as soon as practicable. Any change undertaken without prior City of Nashua approval shall not be compensated and is, at the City of Nashua's election, sufficient reason for contract termination.

6. **CITY OF NASHUA COOPERATION** The City of Nashua agrees that its personnel will cooperate with Independent Contractor in the performance of its work under this contract and that such personnel will be available to Independent Contractor for consultation at reasonable times and after being given sufficient advance notice that will prevent conflict with their other responsibilities. The City of Nashua also agrees to provide Independent Contractor with access to City of Nashua records in a reasonable time and manner and to schedule items that require action by the Board of Public Aldermen and Finance Committee in a timely manner. The City of Nashua and Independent Contractor also agree to attend all meetings called by the City of Nashua or Independent Contractor to discuss the work under the Contract, and that Independent Contractor may elect to conduct and record such meetings and shall later distribute prepared minutes of the meeting to the City of Nashua.

7. **DISCOVERY OF CONFLICTS, ERRORS, OMISSIONS, AMBIGUITIES, OR DIScrepancies** Independent Contractor warrants that it has examined all contract documents, has brought all
conflicts, errors, discrepancies, and ambiguities to the attention of the City of Nashua in writing, and has concluded that the City of Nashua's resolution of each matter is satisfactory to Independent Contractor. All future questions Independent Contractor may have concerning interpretation or clarification of this contract shall be submitted in writing to the City of Nashua within 10 calendar days of their arising. The writing shall state clearly and in full detail the basis for Independent Contractor's question or position. The City of Nashua representative shall render a decision within 15 calendar days. The City of Nashua's decision on the matter is final. Any work affected by a conflict, error, omission, or discrepancy which has been performed by Independent Contractor prior to having received the City of Nashua's resolution shall be at Independent Contractor's risk and expense. At all times, Independent Contractor shall carry on the work under this contract and maintain and complete work in accordance with the requirements of the contract or determination of the City of Nashua. Independent Contractor is responsible for requesting clarification or interpretation and is solely liable for any cost or expense arising from its failure to do so.

8. **TERMINATION OF CONTRACT**

**A. TERMINATION, ABANDONMENT, OR SUSPENSION AT WILL.** The City of Nashua, in its sole discretion, shall have the right to terminate, abandon, or suspend all or part of the project and contract at will. If the City of Nashua chooses to terminate, abandon, or suspend all or part of the project, it shall provide Independent Contractor 10 day’s written notice of its intent to do so.

If all or part of the project is suspended for more than 90 days, the suspension shall be treated as a termination at will of all or part of the project and contract.

Upon receipt of notice of termination, abandonment, or suspension at will, Independent Contractor shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Place no further orders or subcontracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.
3. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the City of Nashua of all orders or subcontracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the City of Nashua any orders or subcontracts specified in the notice, and revoke agreements specified in the notice.
4. Not resume work after the effective date of a notice of suspension until receipt of a written notice from the City of Nashua to resume performance.

In the event of a termination, abandonment, or suspension at will, Independent Contractor shall receive all amounts due and not previously paid to Independent Contractor for work satisfactorily completed in accordance with the contract prior to the date of the notice and compensation for work thereafter completed as specified in the notice. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work.

**B. TERMINATION FOR CAUSE** This agreement may be terminated by the City of Nashua on 10 calendar day’s written notice to Independent Contractor in the event of a failure by Independent Contractor to adhere to any or all the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the City of Nashua, to complete or make sufficient progress on the work in a timely and professional manner. Independent Contractor shall be given an
opportunity for consultation with the City of Nashua prior to the effective date of the termination. Independent Contractor may terminate the contract on 10 calendar days written notice if, through no fault of Independent Contractor, the City of Nashua fails to pay Independent Contractor for 45 days after the date of approval by the City of Nashua of any Application for Payment.

Upon receipt of notice of termination for cause, Independent Contractor shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Provide the City of Nashua with a list of all unperformed services.
3. Place no further orders or sub-contracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.
4. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the City of Nashua of all orders or sub contracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the City of Nashua any orders or sub contracts specified in the notice, and revoke agreements specified in the notice.
5. Not resume work after the effective date of a notice of termination unless and until receipt of a written notice from the City of Nashua to resume performance.

In the event of a termination for cause, Independent Contractor shall receive all amounts due and not previously paid to Independent Contractor for work satisfactorily completed in accordance with the contract prior to the date of the notice, less all previous payments. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work. Any such payment may be adjusted to the extent of any additional costs occasioned to the City of Nashua by reasons of Independent Contractor's failure. Independent Contractor shall not be relieved of liability to the City of Nashua for damages sustained from the failure, and the City of Nashua may withhold any payment to the Independent Contractor until such time as the exact amount of damages due to the City of Nashua is determined. All claims for payment by the Independent Contractor must be submitted to the City of Nashua within 30 days of the effective date of the notice of termination.

If after termination for the failure of Independent Contractor to adhere to any of the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the City of Nashua, to complete or make sufficient progress on the work in a timely and professional manner, it is determined that Independent Contractor had not so failed, the termination shall be deemed to have been a termination at will. In that event, the City of Nashua shall, if necessary, make an adjustment in the compensation paid to Independent Contractor such that Independent Contractor receives total compensation in the same amount as it would have received in the event of a termination-at-will.

C. GENERAL PROVISIONS FOR TERMINATION Upon termination of the contract, the City of Nashua may take over the work and prosecute it to completion by agreement with another party or otherwise. In the event Independent Contractor shall cease conducting business, the City of Nashua shall have the right to solicit applications for employment from any employee of the Independent Contractor assigned to the performance of the contract. Neither party shall be considered in default of the performance of its obligations hereunder to the extent that performance of such obligations is prevented or delayed by any cause, existing or future, which is beyond the reasonable control of such party. Delays arising from the actions or inactions of one or more of Independent Contractor's principals, officers, employees, agents,
subcontractors, consultants, vendors, or suppliers are expressly recognized to be within Independent Contractor's control.

9. **Dispute Resolution** The parties shall attempt to resolve any dispute related to this contract as follows. Either party shall provide to the other party, in writing and with full documentation to verify and substantiate its decision, its stated position concerning the dispute. No dispute shall be considered submitted and no dispute shall be valid under this provision unless and until the submitting party has delivered the written statement of its position and full documentation to the other party. The parties shall then attempt to resolve the dispute through good faith efforts and negotiation between the City of Nashua Representative and an Independent Contractor Representative. At all times, Independent Contractor shall carry on the work under this contract and maintain and complete work in accordance with the requirements of the contract or determination or direction of the City of Nashua. If the parties are unable to resolve their dispute as described above within 30 days, the parties may request that the dispute be submitted to the Board of Aldermen for resolution. If the parties are dissatisfied with the decision of the Board of Aldermen, the parties' reserve the right to pursue any available legal and/or equitable remedies for any breaches of this contract except as that right may be limited by the terms of this contract.

10. **No Damages for Delay** Apart from a written extension of time, no payment, compensation, or adjustment of any kind shall be made to Independent Contractor for damages because of hindrances or delays in the progress of the work from any cause, and Independent Contractor agrees to accept in full satisfaction of such hindrances and delays any extension of time that the City of Nashua may provide.

11. **Insurance** Independent Contractor shall carry and maintain in effect during the performance of services under this contract:

   - General Liability insurance in the amount of $1,000,000 per occurrence; $2,000,000 aggregate;
   - $1,000,000 Combined Single Limit Automobile Liability;
   - *Coverage must include all owned, non-owned and hired vehicles.*
   - $1,000,000 Profession Liability;
   - and Workers' Compensation Coverage in compliance with the State of New Hampshire statutes, $100,000/$500,000/$100,000.

Independent Contractor shall maintain in effect at all times during the performance under this contract all specified insurance coverage with insurers. None of the requirements as to types and limits to be maintained by Independent Contractor are intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Independent Contractor under this contract. The City of Nashua shall not maintain any insurance on behalf of Independent Contractor. Subcontractors are subject to the same insurance requirements as Independent Contractor and it shall be the Independent Contractor’s responsibility to ensure compliance of this requirement.

Independent Contractor will provide the City of Nashua with certificates of insurance for coverage as listed below and endorsements affecting coverage required by the contract within ten calendar days after the City of Nashua issues the notice of award. The City of Nashua requires thirty days written notice of cancellation or material change in coverage. The certificates and endorsements for each insurance policy must be signed by a person authorized by the insurer and who is licensed by the State of New Hampshire. **General Liability and Auto Liability policies must name the City of Nashua as an additional insured** and reflect on the certificate of
insurance. Independent Contractor is responsible for filing updated certificates of insurance with
the City of Nashua's Risk Management Department during the life of the contract.

- All deductibles and self-insured retentions shall be fully disclosed in the certificate(s) of
  insurance.
- If aggregate limits of less than $2,000,000 are imposed on bodily injury and
  property damage, Independent Contractor must maintain umbrella liability
  insurance of at least $1,000,000. All aggregates must be fully disclosed on the
  required certificate of insurance.
- The specified insurance requirements do not relieve Independent Contractor of its
  responsibilities or limit the amount of its liability to the City of Nashua or other
  persons, and Independent Contractor is encouraged to purchase such additional
  insurance, as it deems necessary.
- The insurance provided herein is primary, and no insurance held or owned by the City
  of Nashua shall be called upon to contribute to a loss.
- Independent Contractor is responsible for and required to remedy all damage or loss to
  any property, including property of the City of Nashua, caused in whole or part by
  Independent Contractor or anyone employed, directed, or supervised by Professional
  Engineer.

12. INDEMNIFICATION Regardless of any coverage provided by any insurance, Independent
Contractor agrees to indemnify and shall defend and hold harmless the City of Nashua, its agents,
officials, employees and authorized representatives and their employees from and against any and
all suits, causes of action, legal or administrative proceedings, arbitrations, claims, demands,
damages, liabilities, interest, attorney’s fees, costs and expenses of any kind or nature in any
manner caused, occasioned, or contributed to in whole or in part by reason of any negligent act,
omission, or fault or willful misconduct, whether active or passive, of Independent Contractor or
of anyone acting under its direction or control or on its behalf in connection with or incidental to
the performance of this contract. Independent Contractor’s indemnity, defense and hold harmless
obligations, or portions thereof, shall not apply to liability caused by the sole negligence or
willful misconduct of the party indemnified or held harmless.

13. FISCAL CONTINGENCY All payments under this contract are contingent upon the availability to
the City of Nashua of the necessary funds. This contract shall terminate and the City of Nashua's
obligations under it shall be extinguished at the end of any fiscal year in which the City of Nashua
fails to appropriate monies for the ensuing fiscal year sufficient for the performance of this
contract.

Nothing in this contract shall be construed to provide Independent Contractor with a right of
payment over any other entity. Any funds obligated by the City of Nashua under this contract
that are not paid to Independent Contractor shall automatically revert to the City of Nashua’s
discretionary control upon the completion, termination, or cancellation of the agreement. The
City of Nashua shall not have any obligation to re-award or to provide, in any manner, the
unexpended funds to Independent Contractor. Independent Contractor shall have no claim of any
sort to the unexpended funds.

14. COMPENSATION Review by the City of Nashua of Independent Contractor's submitted monthly
invoice forms and progress reports for payment will be promptly accomplished by the City of
Nashua. If there is insufficient information, the City of Nashua may require Independent
Contractor to submit additional information. Unless the City of Nashua, in its sole discretion,
decides otherwise, the City of Nashua shall pay Independent Contractor in full within **30 days of approval** of the submitted monthly invoice forms and progress reports.

15. **COMPLIANCE WITH APPLICABLE LAWS** Independent Contractor, at all times, shall fully and completely comply with all applicable local, state and federal laws, statutes, regulations, ordinances, orders, or requirements of any sort in carrying out the obligations of this contract, including, but not limited to, all federal, state, and local accounting procedures and requirements, all immigration and naturalization laws, and the Americans With Disabilities Act. Independent Contractor shall, throughout the period services are to be performed under this contract, monitor for any changes to the applicable laws, statutes, regulations, ordinances, orders, or requirements, shall promptly notify the City of Nashua in writing of any changes to the same relating to or affecting this contract, and shall submit detailed documentation of any effect of the change in terms of both time and cost of performing the contract.

16. **NONDISCRIMINATION** If applicable or required under any federal or state law, statute, regulation, order, or other requirement, Independent Contractor agrees to the following terms. Independent Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. Independent Contractor agrees to take affirmative action to employ, advance in employment, or to otherwise treat qualified, handicapped individuals without discrimination based upon physical or mental handicap in all employment practices, including but not limited to the following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, rates of pay, or other forms of compensation and selection for training, including apprenticeship.

Without limitation of the foregoing, Independent Contractor's attention is directed to Title 41 "Public Contracts and Property Management" C.F.R. Subtitle B "Other Provisions Relating to Public Contracts" Section 60 “Office of Federal Contract Compliance Programs, Equal Employment, Department of Labor” which, by this reference, is incorporated in this contract.

Independent Contractor agrees to assist disadvantaged business enterprises in obtaining business opportunities by identifying and encouraging disadvantaged suppliers, consultants, and sub consultants to participate to the extent possible, consistent with their qualification, quality of work, and obligation of Independent Contractor under this contract.

In connection with the performance of work under this contract, Independent Contractor agrees not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, or sexual orientation. This agreement includes, but is not 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.

Independent Contractor agrees, if applicable, to insert these provisions in all subcontracts, except for subcontracts for standard commercial supplies or raw materials. Any violation of any applicable provision by Independent Contractor shall constitute a material breach of the contract.

17. **ENDORSEMENT** Independent Contractor shall seal and/or stamp and sign professional documents including drawings, plans, maps, reports, specifications, and other instruments of service prepared by Independent Contractor or under its direction as required under the laws of the State of New Hampshire.
18. **ASSIGNMENT, TRANSFER, DELEGATION, OR SUBCONTRACTING** Independent Contractor shall not assign, transfer, delegate, or subcontract any rights, obligations, or duties under this contract without the prior written consent of the City of Nashua. Any such assignment, transfer, delegation, or subcontracting without the prior written consent of the City of Nashua is void. Any consent of the City of Nashua to any assignment, transfer, delegation, or subcontracting shall only apply to the incidents expressed and provided for in the written consent and shall not be deemed to be a consent to any subsequent assignment, transfer, delegation, or subcontracting. Any such assignment, transfer, delegation, or subcontract shall require compliance with or shall incorporate all terms and conditions set forth in this agreement, including all incorporated Exhibits and written amendments or modifications. Subject to the foregoing provisions, the contract inures to the benefit of, and is binding upon, the successors and assigns of the parties.

19. **CITY INSPECTION OF CONTRACT MATERIALS** The books, records, documents and accounting procedures and practices of Independent Contractor related to this contract shall be subject to inspection, examination and audit by the City of Nashua, including, but not limited to, the contracting agency, the Board of Aldermen, Corporation Counsel, and, if applicable, the Comptroller General of the United States, or any authorized representative of those entities.

20. **DISPOSITION OF CONTRACT MATERIALS** Any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials, including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Independent Contractor in the performance of its obligations under this contract shall be the exclusive property of the City of Nashua and all such materials shall be remitted and delivered, at Independent Contractor's expense, by Independent Contractor to the City of Nashua upon completion, termination, or cancellation of this contract. Alternatively, if the City of Nashua provides its written approval to Independent Contractor, any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Independent Contractor in the performance of its obligations under this contract must be retained by Independent Contractor for a minimum of four years after final payment is made and all other pending matters are closed. If, at any time during the retention period, the City of Nashua, in writing, requests any or all of the materials, then Independent Contractor shall promptly remit and deliver the materials, at Independent Contractor's expense, to the City of Nashua. Independent Contractor shall not use, willingly allow or cause to have such materials used for any purpose other than the performance of Independent Contractor’s obligations under this contract without the prior written consent of the City of Nashua.

21. **PUBLIC RECORDS LAW, COPYRIGHTS, AND PATENTS** Independent Contractor expressly agrees that all documents ever submitted, filed, or deposited with the City of Nashua by Independent Contractor (including those remitted to the City of Nashua by Independent Contractor pursuant to paragraph 20), unless designated as confidential by a specific statute of the State of New Hampshire, shall be treated as public records and shall be available for inspection and copying by any person, or any governmental entity.

No books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Independent Contractor in the performance of its obligations under this contract shall be the subject of any application for a copyright or patent by or on behalf of Independent Contractor. The City of Nashua shall have the right to reproduce any such materials.

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Independent Contractor expressly and indefinitely waives all of its rights to bring, including but not limited to, by way of complaint, interpleader, intervention, or any third party practice, any claims, demands, suits, actions, judgments, or executions, for damages or any other relief, in any administrative or judicial forum, against the City of Nashua or any of its officers or employees, in either their official or individual capacity of the City of Nashua, for violations of or infringement of the copyright or patent laws of the United States or of any other nation. Independent Contractor agrees to indemnify, to defend, and to hold harmless the City of Nashua, its representatives, and employees from any claim or action seeking to impose liability, costs, and attorney fees incurred as a result of or in connection with any claim, whether rightful or otherwise, that any material prepared by or supplied to Independent Contractor infringes any copyright or that any equipment, material, or process (or any part thereof) specified by Independent Contractor infringes any patent.

Independent Contractor shall have the right, in order to avoid such claims or actions, to substitute at its expense non-infringing materials, concepts, products, or processes, or to modify such infringing materials, concepts, products, or processes so they become non-infringing, or to obtain the necessary licenses to use the infringing materials, concepts, products, or processes, provided that such substituted or modified materials, concepts, products, or processes shall meet all the requirements and be subject to all the terms and conditions of this contract.

22. **FINAL ACCEPTANCE** Upon completion of all work under the contract, Independent Contractor shall notify the City of Nashua in writing of the date of the completion of the work and request confirmation of the completion from the City of Nashua. Upon receipt of the notice, the City of Nashua shall confirm to Independent Contractor in writing that the whole of the work was completed on the date indicated in the notice or provide Independent Contractor with a written list of work not completed. With respect to work listed by the City of Nashua as incomplete, Independent Contractor shall promptly complete the work and the final acceptance procedure shall be repeated. The date of final acceptance of a project by the City of Nashua shall be the date upon which the Community Development Division Director or other designated official accepts and approves the notice of completion.

23. **TAXES** Independent Contractor shall pay all taxes, levies, duties, and assessments of every nature due in connection with any work performed under the contract and make any and all payroll deductions required by law. The contract sum and agreed variations to it shall include all taxes imposed by law. Independent Contractor hereby indemnifies and holds harmless the City of Nashua from any liability on account of any and all such taxes, levies, duties, assessments, and deductions.

24. **NON-WAIVER OF TERMS AND CONDITIONS** None of the terms and conditions of this contract shall be considered waived by the City of Nashua. There shall be no waiver of any past or future default, breach, or modification of any of the terms and conditions of the contract unless expressly stipulated to by the City of Nashua in a written waiver.

25. **RIGHTS AND REMEDIES** The duties and obligations imposed by the contract and the rights and remedies available under the contract shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

26. **PROHIBITED INTERESTS** Independent Contractor shall not allow any officer or employee of the City of Nashua to have any indirect or direct interest in this contract or the proceeds of this
contract. Independent Contractor warrants that no officer or employee of the City of Nashua has any direct or indirect interest, whether contractual, noncontractual, financial or otherwise, in this contract or in the business of Independent Contractor. If any such interest comes to the attention of Independent Contractor at any time, a full and complete disclosure of the interest shall be immediately made in writing to the City of Nashua. Independent Contractor also warrants that it presently has no interest and that it will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. Independent Contractor further warrants that no person having such an interest shall be employed in the performance of this contract. If City of Nashua determines that a conflict exists and was not disclosed to the City of Nashua, it may terminate the contract at will or for cause in accordance with paragraph 8.

In the event Independent Contractor (or any of its officers, partners, principals, or employees acting with its authority) is convicted of a crime involving a public official arising out or in connection with the procurement of work to be done or payments to be made under this contract, City of Nashua may terminate the contract at will or for cause in accordance with paragraph 8. Upon termination, Independent Contractor shall refund to the City of Nashua any profits realized under this contract, and Independent Contractor shall be liable to the City of Nashua for any costs incurred by the City of Nashua in completing the work described in this contract. At the discretion of the City of Nashua, these sanctions shall also be applicable to any such conviction obtained after the expiration or completion of the contract.

Independent Contractor warrants that no gratuities (including, but not limited to, entertainment or gifts) were offered or given by Independent Contractor to any officer or employee of the City of Nashua with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending or making of any determinations with respect to the performance of this contract. If City of Nashua determines that such gratuities were or offered or given, it may terminate the contract at will or for cause in accordance with paragraph 8.

The rights and remedies of this section shall in no way be considered for be construed as a waiver of any other rights or remedies available to the City of Nashua under this contract or at law.

27. **Third Party Interests and Liabilities** The City of Nashua and Independent Contractor, including any of their respective agents or employees, shall not be liable to third parties for any act or omission of the other party. This contract is not intended to create any rights, powers, or interest in any third party and this agreement is entered into for the exclusive benefit of the City of Nashua and Independent Contractor.

28. **Survival of Rights and Obligations** The rights and obligations of the parties that by their nature survive termination or completion of this contract shall remain in full force and effect.

29. **Severability** In the event that any provision of this contract is rendered invalid or unenforceable by any valid act of Congress or of the New Hampshire legislature or any court of competent jurisdiction, or is found to be in violation of state statutes or regulations, the invalidity or unenforceability of any particular provision of this contract shall not affect any other provision, the contract shall be construed as if such invalid or unenforceable provisions were omitted, and the parties may renegotiate the invalid or unenforceable provisions for sole purpose of rectifying the invalidity or unenforceability.
30. **Modification of Contract and Entire Agreement** This contract constitutes the entire contract between the City of Nashua and Independent Contractor. The parties shall not be bound by or be liable for any statement, representation, promise, inducement, or understanding of any kind or nature not set forth in this contract. No changes, amendments, or modifications of any terms or conditions of the contract shall be valid unless reduced to writing and signed by both parties.

31. **Choice of Law and Venue** This contract shall be governed exclusively by the laws of the State of New Hampshire and any claim or action brought relating to this contract, the work performed or contracted to be performed thereunder, or referable in anyway thereto shall be brought in Hillsborough County (New Hampshire) Superior Court Southern Judicial District or in the New Hampshire 9th Circuit Court—Nashua and not elsewhere.
EXHIBIT B
SCOPE OF SERVICES, CONTRACT TIME, AND FEE SCHEDULE

Scope of services

SPECIFICATIONS: The scope of work described below includes services for performing 3 applications of Sonar (Fluridone) aquatic herbicide treatments in the Nashua River upstream of the Mine Falls dam (84 acres) to control aquatic invasive species, and up to 2 applications of Sonar (Fluridone) aquatic herbicide treatment in Sandy Pond (4.5 acres), and up to one each algae and emergent vegetation treatment may be performed if deemed necessary during the spring survey.

Permitting:
1. SOLitude staff will be responsible for the following:
   a. Preparing and filing a Special Permit Application and supporting documentation with the NH Division of Pesticide Control.

   b. Notifying affected abutters of the permit application submission; list of abutters to be provided/updated by Client.

   c. Publishing a legal notice in a local newspaper about the permit application filing.

Lake Aquatic Weed Control:

1. Nashua River: Growth of fanwort, Eurasian watermilfoil, variable milfoil and curlyleaf pondweed in 84 acres as specified by NHDES shall be treated and controlled through the application of Sonar One and/or Sonar H4C (Fluridone pellets) as required for control of the specific varieties of aquatic weeds found in the treatment at the time of application.

2. Nashua River: Sonar One herbicides will be applied at a targeted rate of 10 - 20 ppb per application for 3 applications to achieve long-term control of fanwort, Eurasian watermilfoil, variable milfoil and curlyleaf pondweed.

3. Sandy Pond (4.5 acres): Perform spring survey, up to 2 applications of Sonar (Fluridone) herbicide/algaeicide treatment (if necessary), post-treatment survey, preparation and submittal of State reporting as required. Perform algae and emergent treatment (1 of each authorized) if deemed necessary during spring survey.

4. Applications will be performed using SOLitude’s specially designed and calibrated treatment systems and boats. GPS systems will be used to provide real-time navigation and to record treatment passes.

5. Pre-treatment inspection of designated areas will occur prior to treatment.

6. Notification of affected abutters and Town officials via certified mail – return receipt will occur prior to treatment in accordance with Special Permit conditions.

7. Publication of legal notices in a local newspaper for two consecutive weeks will occur prior to treatment in accordance with Special Permit conditions.

8. Shoreline posting will be coordinated and performed prior to treatment in accordance with Special Permit conditions.
Post-Treatment Survey, Herbicide Residue Testing and Reporting:

1. A post-treatment survey of the treatment areas will be performed to assess the level of target plant control achieved and to document impact to non-target plants. This survey will be performed in accordance with Special Permit conditions.

2. SOLitude will hire an independent, NELAC accredited laboratory to collect and analyze water samples for herbicide residues following treatment in accordance with Special Permit conditions. Copies of sample results will be provided to the client via email as soon as they are available from the lab.

3. A project-completion report will be prepared that details the treatment program performed, provides results of the herbicide residue testing and summarizes results of the treatment program. The report will be prepared and submitted in accordance with Special Permit conditions.

Client Responsibilities:

1. Client will be responsible for the following:
   a. Providing information required for the permit application process upon request.
   b. Providing Certified Abutters List and copy of Town Tax Maps for abutter notification as required.
   c. Assisting with querying abutting property owners as to their source of domestic water.
   d. Providing a copy of the Long-Term Management Plan (LTMP) prepared by DES.

Contract Time

The term of this contract is from the effective date to November 30th, 2019.

Fee Schedule

Task 1:
Nashua River:
Prepare and file Special Permit application with NH DPC - inclusive of required direct mailing to a maximum of up to 60 abutters and publication of 1 newspaper legal notice. Compile and mail required certified mailings to a maximum of 60 abutters and publication of 2 newspaper legal notices. This will provide the notification for all three treatments. (Note: any changes to last year’s permitting process, requirement for a public hearing, or notification to additional abutters, may incur additional charges.)

Jan-May $2,830.00 Payment due upon permit application submission ($1,460) and upon completion of mailing and notifications ($1,370).

Sandy Pond:
Prepare and file Special Permit application with NH DPC. (Note: any changes to last year’s permitting process may incur additional charges.)

April $350.00 Payment due upon completion

Task 2:
Nashua River:
Perform chemical treatment in up to 84 acres with up to 3 applications with Sonar

One and/or Sonar H4C herbicides at 10-20 ppb - inclusive of required certified mailings to a maximum of 60 abutters and publication of 1 newspaper legal notices; all labor, chemical & equipment needed for the treatment. (Note: should less acreage require treatment or a different herbicide application rate be required the cost will be adjusted accordingly; notifying additional abutters via certified mail will carry a cost of $9.00/abutter)

June $18,121.00 Payment due upon completion (1st treatment)
Late June $18,121.00 Payment due upon completion (2nd treatment)
Mid July $18,121.00 Payment due upon completion (3rd treatment)

June or July $54,363.00 Payment due upon completion

Sandy Pond:
Perform spring survey, up to 2 applications of Sonar (Fluridone) herbicide/algaecide treatment (if necessary), post-treatment survey, preparation and submittal of State reporting as required.

May - July $2,060.00 Payment due upon completion

Task 3:
Nashua River:
Perform herbicide residue testing after each treatment, assuming 2 sampling rounds and analysis of 4 sampling locations total for each of 3 treatments (12 samples total) is required
(Note: The number and frequency of post-treatment herbicide residue samples is determined by the NH DPC following approval of the NH DES final treatment map. SÖLitude is only responsible for coordination of sample collection and has no influence on the number of samples required by the Special Permit. Should additional sampling be necessary, there will additional charges of $150/sample analyzed and $350-$500 per sample collection round.)

June – July $3,900.00 - Payment due upon completion of each sampling event.

Task 4:
Nashua River: Perform post-treatment survey and submittal of the required written project completion report to the State.

October $1,200.00 Payment due upon completion

Task 5:
Sandy Pond:
Pond Algae Treatment:
1. When requested, any infestation of algae found in the pond at the time of application, shall be treated and controlled through the application of aquatic algaecides, aquatic herbicides, and aquatic surfactants as required to control the specific varieties of algae present at the time of service.
2. Ponds which have more than fifty percent (50 %) coverage of undesirable algae will be treated in a series of two (2) to three (3) applications as required to help prevent any damage to beneficial aquatic life.

$515.00 per Treatment
Note a single treatment is authorized at this time, additional treatments would require client authorization
Task 6:
Pond Emergent Weed Treatment:
1. If approved, growth of nuisance emergent aquatic weeds within the pond shall be treated and controlled through the application of contact aquatic herbicides and surfactants as required for control of the specific varieties of aquatic weeds found in the pond at the time of application.
2. Herbicide application for emergent vegetation will happen later in the growing season, if required.
3. Contact herbicide will be applied at the rate appropriate to achieve control of the unwanted submersed aquatic weeds present in the pond and susceptible to the herbicide at the time of application.

$495.00 per Treatment
Note a single treatment is authorized at this time, additional treatments would require client authorization

Total: up to $65,713.00

*Note: adjustments to the program cost will be confirmed with the Client in advance; payment is due within 30 days of an invoice date
2019 herbicide treatment areas in Nashua River and Sandy Pond
March 14, 2019
Memo #19-129

TO: MAYOR DONCHESS
FINANCE COMMITTEE

SUBJECT: PURCHASE OF TWO (2) 2019 FORD TRANSIT CARGO VANS (VALUE: $57,857)
DEPARTMENT: 191 SCHOOL; FUND: CERF

Please see the attached documentation from Shawn Smith, Director of Plant Operations for the information related to this purchase.

Vehicle 1 is a 2019 Ford Transit T-350 Van with Adrian Steel up-fit at a net cost of $25,919 including trade in.

Vehicle 2 is a 2019 Ford Transit T-250 Van at a net cost of $31,938 including trade in.

Vehicle #117 is a 2003 Ford E-350 Van and is being traded in with 120,000 miles and Vehicle #123 is a 2003 Ford E-350 Van and is being traded in with 110,000 miles. Trade in value was $500 each which is reflected in the final cost.

Pursuant to § 5-84 Special purchase procedures A. (3) Purchases which can be procured through cooperative intergovernmental purchase agreements with other governmental jurisdictions.

The Nashua School District Director of Plant Operations and the Purchasing Department recommends the purchase of these vehicles in the amount of $57,857 from Grappone Automotive Group of Bow, NH.

Respectfully,

[Signature]
Dan Koochen
Purchasing Manager

Cc: S Smith  D Donavan
Re: Vehicle Proposal

November 5th, 2018

Hi Gary,

Quotes for 2019 Ford Transit T-250 and T-350 low roof cargo vans with the long wheelbase. The T-350 van will include the Adrian Steel upfit from Boyer's that you sent over. I have deleted the 120 volt outlet from both units for a credit of $100 each. Here are the updated quotes and as always, I used the current State/Government price concessions from Ford Motor Co. to arrive at the prices.

Quote Price for 2019 T-250 Van: $26,419
Quote Price for 2019 T-350 Van with Upfit equipment: $32,438

** The trade in allowance for each of your 2003 Vans would be $500 each and can be deducted from the quote price should you decide to trade them.

Thank you for your continued business.

Sincerely,

Jeff Harsin
Fleet Mgr
603-226-8010
jharsin@grappone.com
<table>
<thead>
<tr>
<th>Item</th>
<th>Item Type</th>
<th>Quantity Ordered</th>
<th>UOM</th>
<th>Unit Cost</th>
<th>Extended Cost</th>
<th>Distributions</th>
<th>Activity / Account Category</th>
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</table>

**LOW ROOF CARGO VAN WITH ADRIAN**
Vendor: GRAPPONE AUTOMOTIVE GROUP
LOW ROOF CARGO VAN WITH ADRIAN STEEL UPLIFT

Totals: 1 Lines | 31938.00 | 31938.00 USD
## Selected Options

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>MSRP</th>
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<tbody>
<tr>
<td><strong>Base Vehicle</strong></td>
<td><strong>W2Z</strong> Base Vehicle Price (W2Z)</td>
<td>N/A</td>
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</table>
| **Packages** | **101A** Order Code 101A  
Includes:  
- Engine: 3.7L Ti-VCT V6  
  Includes SEIC capability.  
- Transmission: 6-Speed Automatic w/OD & SelectShift  
  Includes auxiliary transmission oil cooler.  
- GVWR: 9,500 lbs  
- Tires: 235/65R16C AS BSW  
- Wheels: 16" Steel w/Black Center Hubcap  
- Pewter Vinyl Dual Bucket Seats  
  Includes 2-way manual driver seat, 2-way manual passenger seat and driver arnrest.  
- Vinyl Front Bucket Seats  
- Radio: AM/FM Stereo  
  (18). Includes digital clock and audio input jack.  
- 4 Front Speakers  
  - No rear speakers. | N/V/C |

## Powertrain

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<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>99M</strong> Engine: 3.7L Ti-VCT V6</td>
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<td></td>
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<tr>
<td><strong>446</strong> Transmission: 6-Speed Automatic w/OD &amp; SelectShift</td>
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## Wheels & Tires

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</thead>
<tbody>
<tr>
<td><strong>STDTR</strong> Tires: 235/65R16C AS BSW</td>
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<tr>
<td><strong>STDWL</strong> Wheels: 16&quot; Steel w/Black Center Hubcap</td>
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</table>

## Seats & Seat Trim

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Included</th>
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</thead>
</table>
| **21G** Pewter Vinyl Dual Bucket Seats  
Includes 2-way manual driver seat, 2-way manual passenger seat and driver arnrest. | Included |
| **V** Vinyl Front Bucket Seats | Included |

## Other Options

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<tr>
<th>Code</th>
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<tr>
<td><strong>PAINT</strong> Monotone Paint Application</td>
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<td><strong>14WB</strong> 148&quot; Wheelbase</td>
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<td><strong>543</strong> Long-Arm Power Mirrors</td>
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Prices and content availability as shown are subject to change and should be treated as estimates only. Actual base vehicle, package and option pricing may vary from this estimate because of special local pricing, availability or pricing adjustments not reflected in the dealer’s computer system. See dealership for the most current information.

Prepared by: Jeff Harsin  
Date: 10/18/2018
### Selected Options (cont'd)

<table>
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<th>Code</th>
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<tr>
<td>17B</td>
<td>Fixed Rear-Door/Fixed Pass-Side Cargo-Door Glass</td>
<td>$250.00</td>
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<tr>
<td></td>
<td>Includes steel mesh window guard on 2nd row 60/40 passenger side cargo doors.</td>
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<tr>
<td>86F</td>
<td>2 Additional Keys (4 Total)</td>
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<td></td>
<td>Includes key fobs.</td>
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<td>90C</td>
<td>12V to 110V Power Inverter</td>
<td>$100.00</td>
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<tr>
<td>58U</td>
<td>Radio: AM/FM Stereo</td>
<td>Included</td>
</tr>
<tr>
<td></td>
<td>(18), includes digital clock and audio input jack.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Includes:</td>
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<tr>
<td></td>
<td>- 4 Front Speakers</td>
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</tr>
<tr>
<td></td>
<td>- No rear Speakers</td>
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<tr>
<td>43B</td>
<td>Back Up Alarm</td>
<td>$125.00</td>
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### Interior Colors

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### Primary Colors

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### SUBTOTAL

$38,110.00

### Destination Charge

$1,395.00

### TOTAL

$39,505.00

---

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Prepared by: Jeff Hansin  Date: 10/18/2018
Boyers Auto Body & Sales, Inc.
156 Lowell Road
Hudson, NH 03051

Phone #   603-882-6637

Sales Order

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Name / Address
NASHUA SCHOOL DISTRICT
141 LEDGE ST
NASHUA, NH 03060

Ship To

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<td>V-5156TL148</td>
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Total
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**LOW ROOF CARGO VAN**  
Vendor: GRAPPONE AUTOMOTIVE GROUP

**Totals:** 1 Lines  
25919.00  
25919.00 USD
# Selected Options

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<td><strong>Base Vehicle</strong></td>
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<tr>
<td>101A</td>
<td>Order Code 101A</td>
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<tr>
<td></td>
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</tr>
<tr>
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<td>- Transmission: 6-Speed Automatic w/OD &amp; SelectShift</td>
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<td>- GVWR: 9,000 lbs</td>
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<td>- Tires: 235/65R16C AS BSW</td>
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<td><strong>Powertrain</strong></td>
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<tr>
<td></td>
<td>Includes auxiliary transmission oil cooler.</td>
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<td>X7L</td>
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<td><strong>Wheels &amp; Tires</strong></td>
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<tr>
<td>V</td>
<td>Vinyl Front Bucket Seats</td>
<td>Included</td>
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<tr>
<td><strong>Other Options</strong></td>
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</tr>
<tr>
<td>PAINT</td>
<td>Monotone Paint Application</td>
<td>STD</td>
</tr>
<tr>
<td>148WB</td>
<td>148&quot; Wheelbase</td>
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<td>543</td>
<td>Long-Arm Power Mirrors</td>
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Prepared by: Jeff Harsin  Date: 10/18/2018
Selected Options (cont'd)

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</tr>
<tr>
<td>43B</td>
<td>Back Up Alarm</td>
<td>$125.00</td>
</tr>
</tbody>
</table>

Interior Colors

- VK_01: Pewter

Primary Colors

- UX_02: Ingot Silver Metallic

| Subtotal  | $36,950.00 |
| Destination Charge | $1,395.00 |
| **TOTAL** | **$37,445.00** |
State of New Hampshire
Registration certificate not valid for the purposes. All resident taxes for which I am liable have been paid.
PLATE G16498 TYPE PERM CD 2 VSN 0018171 GW 9400
MAKE FORD MODEL ECONOLINE RDB STLVAN CLR SIL
YEAR 2003 F G AXLES 2 LP NEW 25400 VIN 1FTSS34L73HA25220
PPR PP TYPE P
DOBD LAST NAME SUFFIX FIRST NAME M
CYNASLD01 CITY OF NASHUA - SCHOOL D

REGISTRATION RENEWAL
21MAR2015 5002.0001 3911 3251 1 $0.00

CITY OF NASHUA - SCHOOL DEPT
141 LEDGE STREET
NASHUA NH 03060

120,000 MILES X
TRADE IN

State of New Hampshire
Registration certificate not valid for the purposes. All resident taxes for which I am liable have been paid.
PLATE G17136 TYPE PERM CD 9 VSN 0018167 GW 9400
MAKE FORD MODEL ECONOLINE RDB STLVAN CLR GRY
YEAR 2003 F G AXLES 2 LP NEW 26000 VIN 1FTSS34L93HB87849
PPR PP TYPE S
DOBD LAST NAME SUFFIX FIRST NAME M
CYNASLD01 CITY OF NASHUA - SCHOOL D

REGISTRATION RENEWAL
21MAR2015 5001.0022 3911 3251 1 $0.00

CITY OF NASHUA - SCHOOL DEPT
141 LEDGE STREET
NASHUA NH 03060

112,000 MILES X
TRADE IN
March 14, 2019
Memo #19-132

TO: MAYOR DONCHESS
FINANCE COMMITTEE

SUBJECT: 2019 ASPHALT TESTING (VALUE: $48,600)
DEPARTMENT: 160 ADMIN/ENGINEERING; FUND: BOND

Please see the attached communication from Stephen Dookran, P.E., City Engineer, dated February 28, 2019 for information related to this purchase.

Pursuant to § 5-78 Major purchases (greater than $10,000) A. All supplies and contractual services, except as otherwise provided herein, when the estimated cost thereof shall exceed $10,000 shall be purchased by formal, written contract from the lowest responsible bidder, after due notice inviting bids.

The City Engineer, Board of Public Works (February 28, 2019 meeting) and the Purchasing Department recommend the award of this contract in an amount of $48,600 to S.W. Cole Engineering, Inc. of Londonderry, NH.

Respectfully,

Dan Kookan
Purchasing Manager

Cc: S Dookran    L Fauteux
City of Nashua, Public Works Division

To: Board of Public Works

Meeting Date: February 28, 2019

From: Stephen Dookran, P.E., City Engineer
Engineering Department

Re: 2019 Asphalt Testing – Arterial Roadways; Local & Collector Roadways Construction

D. Motion: To approve the award of the 2019 Asphalt Testing contract to S.W. Cole Engineering, Inc., Londonderry, NH in the amount of $48,600. Funding will be through: Department: 161 Street; Fund: General; Activity: Paving; Department: 160 Admin/Engineering; Fund: Bond; Activity: Paving.

Discussion: The 2019 Paving Contract (Arterial Roadways Contract; Local & Collector Roadways Contract) is expected to pave approximately 23 miles of City streets. The paving project includes the placement of approximately 84,072 tons of hot mix asphalt and 4,650 tons of high strength hot mix asphalt. The purpose of the 2019 Asphalt Testing contract is to test the asphalt used during 2019 Paving Program.

The testing company will perform testing at the asphalt plant and on the roads during all paving operations. In addition to performing testing, the technician assigned to plant inspections shall observe all materials and observe the hot-mix batching process. The testing is being conducted to ensure compliance with contract specifications for compaction, liquid asphalt content, pavement thickness, and aggregate gradation.

The contract was advertised on January 30, 2019. Three contractors attended the non-mandatory pre-bid meeting. The contractors submitted bids on February 20, 2019 and are listed below:

- S.W. Cole Engineering, Inc. of Londonderry, NH $48,600.00
- Terracon Consulting Engineers & Scientist of Manchester, NH $54,350.00
- John Turner Consulting, Inc. of Dover, NH $62,950.00

S.W. Cole Engineering, Inc. of Londonderry, NH at a bid price of $48,600.00 is the qualified low bidder. S.W. Cole Engineering, Inc. has satisfactorily performed similar work for past paving projects in the City.
City of Nashua, Public Works Division

To: Board of Public Works  
Meeting Date: February 28, 2019

From: Stephen Dookran, P.E., City Engineer  
Engineering Department

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Construction

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<table>
<thead>
<tr>
<th>Street Name</th>
<th>From</th>
<th>To</th>
<th>Road Length</th>
<th>Tonnage</th>
<th>No. of Cores needed (tonnage/750 tons)</th>
<th>No. of Cores collected (rounded off)</th>
</tr>
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<tr>
<td>Alds Street</td>
<td>Main St</td>
<td>East Hollis St</td>
<td>5,084</td>
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<td>Canal Street-3</td>
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<td>E. Hollis</td>
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<td>East Hollis Street-4</td>
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<td>Conant Rd</td>
<td>Main Dunstable Rd 3B</td>
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<td>3,077</td>
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<td>Main Dunstable Road 5</td>
<td>Gregg Rd</td>
<td>Whitford Rd</td>
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<td>4,108</td>
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<td>Indian Rock Rd</td>
<td>Blue Hill Ave</td>
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<td>7,045</td>
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<td>Newcastle Dr</td>
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<td>D.W. Highway</td>
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**LENGTH:** 11.76 **51,623.39**

No. of Cores needed: 85
Assume 100 cores are needed
### 2019 PAVING PROGRAM - LOCAL & COLLECTOR ROADWAYS

<table>
<thead>
<tr>
<th>Street Name</th>
<th>From</th>
<th>To</th>
<th>Road Length</th>
<th>Tonnage</th>
<th>No. of Cores needed (tonnage/50 tons)</th>
<th>No. of Cores collected (rounded off)</th>
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<td>Harris Rd</td>
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<td>Carmine Rd</td>
<td>Marie Ave</td>
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<td>Bedford Street</td>
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<td>Cul-De-Sac</td>
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<td>Hideaway Rd</td>
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<td>Cambridge Road</td>
<td>Conant Rd</td>
<td>Pittsburgh Dr</td>
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<td>Broad St</td>
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<td>Ducas Avenue</td>
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<td>(Asphalt Change @ Hollis Line)</td>
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<td>Fowell Ave</td>
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<td>Gillis Street</td>
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<td>Alls St</td>
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<td>767.13</td>
<td>1.02284</td>
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<td>Arlington St</td>
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<td>Newburgh Rd</td>
<td>Westwood Dr</td>
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<td>Park Ave</td>
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### Note
- Assume 60 cores are needed.
2019 ASPHALT TESTING

A CONTRACT BETWEEN

THE CITY OF NASHUA, 229 MAIN STREET, CITY HALL, NASHUA, NH 03060
AND

S.W. COLE ENGINEERING, INC.
and its successors, transferees and assignees (together “Independent Contractor”)

NAME AND TITLE OF INDEPENDENT CONTRACTOR

13 DELTA DRIVE #8, LONDON DERRY, NH 03053
ADDRESS OF INDEPENDENT CONTRACTOR

WHEREAS, the City of Nashua, a political subdivision of the State of New Hampshire, from time to time requires the services of an Independent Contractor; and

WHEREAS, it is deemed that the services of an Independent Contractor herein specified are both necessary and desirable and in the best interests of the City of Nashua; and

WHEREAS, Independent Contractor represents they are duly qualified, equipped, staffed, ready, willing and able to perform and render the services hereinafter described;

NOW, THEREFORE, in consideration of the agreements herein made, the parties mutually agree as follows:

1. DOCUMENTS INCORPORATED. The following exhibits are by this reference incorporated herein and are made part of this contract:

   Exhibit A--General Conditions for Contracts
   Exhibit B--Scope of Services
   Exhibit C--S.W. Cole Bid Schedule, dated February 20, 2019

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, proposals, representations or agreements, either written or oral. Any other documents which are not listed in this Article are not part of the Contract.

In the event of a conflict between the terms of the Proposal and the terms of this Agreement, a written change order and/or fully executed City of Nashua Purchase Order, the terms of this Agreement, the written change order or the fully executed City of Nashua Purchase Order shall control over the terms of the Proposal.

2. WORK TO BE PERFORMED Except as otherwise provided in this contract, Independent Contractor shall furnish all services, equipment, and materials and shall perform all operations necessary and required to carry out and perform in accordance with the terms and conditions of the contract the work described in the Proposal.
3. **PERIOD OF PERFORMANCE.** Independent Contractor shall perform and complete all work within the time periods set forth and may only be altered by the parties by a written agreement to extend the period of performance or by termination in accordance with the terms of the contract. Independent Contractor shall begin performance upon receipt of an Executed Contract and a valid Purchase Order issued from the City of Nashua.

Completion time for the project will be as follows:

Substantial completion shall be by **October 15, 2019.** Substantial completion occurs when all samples are taken.

Contract completion shall be by **October 31, 2019.** Contract completion occurs when all test results are received by the City.

4. **COMPENSATION.** Independent Contractor agrees to perform the work for a total cost not to exceed **FORTY-EIGHT THOUSAND SIX HUNDRED DOLLARS** ($48,600.00)

The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work.

Unless Independent Contractor has received a written exemption from the City of Nashua, Independent Contractor shall submit an itemized Application for Payment for operations completed in accordance with the values stated in the Agreement. Such applications shall be supported by such data substantiating the Independent Contractor’s right to payment as the City of Nashua may reasonably require. Independent Contractor shall submit monthly requests for payment for services performed under this agreement directly to:

- Electronically via email to VendorAPInvoices@NashuaNH.gov

OR

- Paper Copies via US Mail to:

  City of Nashua, City Hall  
  Accounts Payable  
  229 Main Street  
  Nashua, NH 03060

*Please do not submit invoices both electronically and paper copy.*

In addition, and to facilitate the proper and timely payment of applications, the City of Nashua requires that all submitted invoices contain a valid **PURCHASE ORDER NUMBER.**

Applications for Payment shall be submitted no later than fifteen (15) days after the end of each month. The City of Nashua will pay for work satisfactorily completed and accurately invoiced by Independent Contractor within thirty (30) days from the time of approval by the City of Nashua.

5. **EFFECTIVE DATE OF CONTRACT.** This contract shall not become effective until and unless approved by the City of Nashua.
6. NOTICES. All notices, requests, or approvals required or permitted to be given under this contract shall be in writing, shall be sent by hand delivery, overnight carrier, or by United States mail, postage prepaid, and registered or certified, and shall be addressed to:

CITY OF NASHUA REPRESENTATIVE:
Mandeep Gill, P.E.
Division of Public Works, Engineering
9 Riverside Street
Nashua, NH 03062

REPRESENTATIVE:
Andrew Michaud
S.W. Cole Engineering, Inc.
13 Delta Drive #8
Londonderry, NH 03053

Any notice required or permitted under this contract, if sent by United States mail, shall be deemed to be given to and received by the addressee thereof on the third business day after being deposited in the mail. The City of Nashua or Independent Contractor may change the address or representative by giving written notice to the other party.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be signed and intend to be legally bound thereby.

City of Nashua, NH (signature)  
SW COLE Engineering, Inc. (signature)

James Donchess, Mayor  
Jason G. Richard, Chief Financial Officer
(Printed Name and Title)  
(Printed Name and Title)

March 13, 2019

Date  
Date
EXHIBIT A
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General Terms and Conditions

1. **Definitions** Unless otherwise required by the context, "Independent Contractor", and its successors, transferees and assignees (together "Independent Contractor") includes any of the Independent Contractor's consultants, sub consultants, contractors, and subcontractors.

2. **Independent Contractor Status** The parties agree that Independent Contractor shall have the status of and shall perform all work under this contract as a Independent Contractor, maintaining control over all its consultants, sub consultants, contractors, or subcontractors. The only contractual relationship created by this contract is between the City of Nashua and Independent Contractor, and nothing in this contract shall create any contractual relationship between the City of Nashua and Independent Contractor's consultants, sub consultants, contractors, or subcontractors. The parties also agree that Independent Contractor is not a City of Nashua employee and that there shall be no:

   (1) Withholding of income taxes by the City of Nashua;
   (2) Industrial insurance coverage provided by the City of Nashua;
   (3) Participation in group insurance plans which may be available to employees of the City of Nashua;
   (4) Participation or contributions by either the Independent Contractor or the City of Nashua to the public employee's retirement system;
   (5) Accumulation of vacation leave or sick leave provided by the City of Nashua;
   (6) Unemployment compensation coverage provided by the City of Nashua.

3. **Standard of Care** Independent Contractor shall be responsible for the professional quality, technical accuracy, timely completion, and coordination of all work performed under this contract. Independent Contractor warrants that all work shall be performed with the degree of professional skill, care, diligence, and sound practices and judgment that are normally exercised by recognized professional firms with respect to services of a similar nature. It shall be the duty of Independent Contractor to assure at its own expense that all work is technically sound and in conformance with all applicable federal, state, and local laws, statutes, regulations, ordinances, orders, or other requirements. In addition to all other rights which the City of Nashua may have, Independent Contractor shall, at its own expense and without additional compensation, re-perform work to correct or revise any deficiencies, omissions, or errors in the work or the product of the work or which result from Independent Contractor's failure to perform in accordance with this standard of care. Any approval by the City of Nashua of any products or services furnished or used by Independent Contractor shall not in any way relieve Independent Contractor of the responsibility for professional and technical accuracy and adequacy of its work. City of Nashua review, approval, or acceptance of, or payment for any of Independent Contractor's work under this contract shall not operate as a waiver of any of the City of Nashua's rights or causes of action under this contract, and Independent Contractor shall be and remain liable in accordance with the terms of the contract and applicable law.

Independent Contractor shall furnish competent and skilled personnel to perform the work under this contract. The City of Nashua reserves the right to approve key personnel assigned by Independent Contractor to perform work under this contract. Approved key personnel shall not be taken off of the project by Independent Contractor without the prior written approval of the City of Nashua, except in the event of termination of employment. Independent Contractor shall, if requested to do so by the City of Nashua, remove from the job any personnel whom the City of Nashua determines to be incompetent, dishonest, or uncooperative.
4. CITY OF NASHUA REPRESENTATIVE The City of Nashua may designate a City of Nashua representative for this contract. If designated, all notices, project materials, requests by Independent Contractor, and any other communication about the contract shall be addressed or be delivered to the City of Nashua Representative.

5. CHANGES TO SCOPE OF WORK The City of Nashua may, at any time, by written order, make changes to the general scope, character, or cost of this contract and in the services or work to be performed, either increasing or decreasing the scope, character, or cost of Independent Contractor’s performance under the contract. Independent Contractor shall provide to the City of Nashua within 10 calendar days, a written proposal for accomplishing the change. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Independent Contractor should proceed with any or all of the proposed change. If the change causes an increase or a decrease in Independent Contractor’s cost or time required for performance of the contract as a whole, an equitable adjustment shall be made and the contract accordingly modified in writing. Any claim of Independent Contractor for adjustment under this clause shall be asserted in writing within 30 days of the date the City of Nashua notified Independent Contractor of the change.

When Independent Contractor seeks changes, Independent Contractor shall, before any work commences, estimate their effect on the cost of the contract and on its schedule and notify the City of Nashua in writing of the estimate. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Independent Contractor should proceed with any or all of the proposed change.

Except as provided in this paragraph, Independent Contractor shall implement no change unless the City of Nashua in writing approves the change. Unless otherwise agreed to in writing, the provisions of this contract shall apply to all changes. The City of Nashua may provide verbal approval of a change when the City of Nashua, in its sole discretion, determines that time is critical or public health and safety are of concern. Any verbal approval shall be confirmed in writing as soon as practicable. Any change undertaken without prior City of Nashua approval shall not be compensated and is, at the City of Nashua’s election, sufficient reason for contract termination.

6. CITY OF NASHUA COOPERATION The City of Nashua agrees that its personnel will cooperate with Independent Contractor in the performance of its work under this contract and that such personnel will be available to Independent Contractor for consultation at reasonable times and after being given sufficient advance notice that will prevent conflict with their other responsibilities. The City of Nashua also agrees to provide Independent Contractor with access to City of Nashua records in a reasonable time and manner and to schedule items that require action by the Board of Public Works and Finance Committee in a timely manner. The City of Nashua and Independent Contractor also agree to attend all meetings called by the City of Nashua or Independent Contractor to discuss the work under the Contract, and that Independent Contractor may elect to conduct and record such meetings and shall later distribute prepared minutes of the meeting to the City of Nashua.

7. DISCOVERY OF CONFLICTS, ERRORS, OMISSIONS, AMBIGUITIES, OR DISCREPANCIES Independent Contractor warrants that it has examined all contract documents, has brought all conflicts, errors, discrepancies, and ambiguities to the attention of the City of Nashua in writing, and has concluded that the City of Nashua’s resolution of each matter is satisfactory to Independent Contractor. All future questions Independent Contractor may have concerning interpretation or clarification of this contract shall be submitted in writing to the City of Nashua within 10 calendar days of their arising. The writing shall state clearly and in full detail the basis for Independent Contractor’s question or position. The City of Nashua representative shall render
a decision within 15 calendar days. The City of Nashua's decision on the matter is final. Any work affected by a conflict, error, omission, or discrepancy which has been performed by Independent Contractor prior to having received the City of Nashua's resolution shall be at Independent Contractor's risk and expense. At all times, Independent Contractor shall carry on the work under this contract and maintain and complete work in accordance with the requirements of the contract or determination of the City of Nashua. Independent Contractor is responsible for requesting clarification or interpretation and is solely liable for any cost or expense arising from its failure to do so.

8. TERMINATION OF CONTRACT

A. TERMINATION, ABANDONMENT, OR SUSPENSION AT WILL. The City of Nashua, in its sole discretion, shall have the right to terminate, abandon, or suspend all or part of the project and contract at will. If the City of Nashua chooses to terminate, abandon, or suspend all or part of the project, it shall provide Independent Contractor 10 day's written notice of its intent to do so.

If all or part of the project is suspended for more than 90 days, the suspension shall be treated as a termination at will of all or part of the project and contract.

Upon receipt of notice of termination, abandonment, or suspension at will, Independent Contractor shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Place no further orders or subcontracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.
3. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the City of Nashua of all orders or subcontracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the City of Nashua any orders or subcontracts specified in the notice, and revoke agreements specified in the notice.
4. Not resume work after the effective date of a notice of suspension until receipt of a written notice from the City of Nashua to resume performance.

In the event of a termination, abandonment, or suspension at will, Independent Contractor shall receive all amounts due and not previously paid to Independent Contractor for work satisfactorily completed in accordance with the contract prior to the date of the notice and compensation for work thereafter completed as specified in the notice. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work.

B. TERMINATION FOR CAUSE. This agreement may be terminated by the City of Nashua on 10 calendar day's written notice to Independent Contractor in the event of a failure by Independent Contractor to adhere to any or all the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the City of Nashua, to complete or make sufficient progress on the work in a timely and professional manner. Independent Contractor shall be given an opportunity for consultation with the City of Nashua prior to the effective date of the termination. Independent Contractor may terminate the contract on 10 calendar days written notice if, through no fault of Independent Contractor, the City of Nashua fails to pay Independent Contractor for 45 days after the date of approval by the City of Nashua of any Application for Payment.

Upon receipt of notice of termination for cause, Independent Contractor shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Provide the City of Nashua with a list of all unperformed services.
3. Place no further orders or sub-contracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.

4. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the City of Nashua of all orders or sub contracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the City of Nashua any orders or sub contracts specified in the notice, and revoke agreements specified in the notice.

5. Not resume work after the effective date of a notice of termination unless and until receipt of a written notice from the City of Nashua to resume performance.

In the event of a termination for cause, Independent Contractor shall receive all amounts due and not previously paid to Independent Contractor for work satisfactorily completed in accordance with the contract prior to the date of the notice, less all previous payments. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work. Any such payment may be adjusted to the extent of any additional costs occasioned to the City of Nashua by reasons of Independent Contractor's failure. Independent Contractor shall not be relieved of liability to the City of Nashua for damages sustained from the failure, and the City of Nashua may withhold any payment to the Independent Contractor until such time as the exact amount of damages due to the City of Nashua is determined. All claims for payment by the Independent Contractor must be submitted to the City of Nashua within 30 days of the effective date of the notice of termination.

If after termination for the failure of Independent Contractor to adhere to any of the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the City of Nashua, to complete or make sufficient progress on the work in a timely and professional manner, it is determined that Independent Contractor had not so failed, the termination shall be deemed to have been a termination at will. In that event, the City of Nashua shall, if necessary, make an adjustment in the compensation paid to Independent Contractor such that Independent Contractor receives total compensation in the same amount as it would have received in the event of a termination-at-will.

C. GENERAL PROVISIONS FOR TERMINATION Upon termination of the contract, the City of Nashua may take over the work and prosecute it to completion by agreement with another party or otherwise. In the event Independent Contractor shall cease conducting business, the City of Nashua shall have the right to solicit applications for employment from any employee of the Independent Contractor assigned to the performance of the contract.

Neither party shall be considered in default of the performance of its obligations hereunder to the extent that performance of such obligations is prevented or delayed by any cause, existing or future, which is beyond the reasonable control of such party. Delays arising from the actions or inactions of one or more of Independent Contractor's principals, officers, employees, agents, subcontractors, consultants, vendors, or suppliers are expressly recognized to be within Independent Contractor's control.

9. DISPUTE RESOLUTION The parties shall attempt to resolve any dispute related to this contract as follows. Either party shall provide to the other party, in writing and with full documentation to verify and substantiate its decision, its stated position concerning the dispute. No dispute shall be considered submitted and no dispute shall be valid under this provision unless and until the submitting party has delivered the written statement of its position and full documentation to the other party. The parties shall then attempt to resolve the dispute through good faith efforts and negotiation between the City of Nashua Representative and a Independent Contractor Representative. At all times, Independent Contractor shall carry on the work under this contract and maintain and complete work in accordance with the requirements of the contract or determination or direction of the City of Nashua. If the parties are unable to resolve their dispute
as described above within 30 days, the parties may request that the dispute be submitted to the Board of Public Works for resolution. If the parties are dissatisfied with the decision of the Board of Public Works, the parties reserve the right to pursue any available legal and/or equitable remedies for any breaches of this contract except as that right may be limited by the terms of this contract.

10. **NO DAMAGES FOR DELAY** Apart from a written extension of time, no payment, compensation, or adjustment of any kind shall be made to Independent Contractor for damages because of hindrances or delays in the progress of the work from any cause, and Independent Contractor agrees to accept in full satisfaction of such hindrances and delays any extension of time that the City of Nashua may provide.

11. **INSURANCE** Independent Contractor shall carry and maintain in effect during the performance of services under this contract:

- General Liability insurance in the amount of $1,000,000 per occurrence; $2,000,000 aggregate;
- $1,000,000 Combined Single Limit Automobile Liability;
- [Coverage must include all owned, non-owned and hired vehicles.]
- and Workers’ Compensation Coverage in compliance with the State of New Hampshire statutes, $100,000/$500,000/$100,000.

Independent Contractor shall maintain in effect at all times during the performance under this contract all specified insurance coverage with insurers. None of the requirements as to types and limits to be maintained by Independent Contractor are intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Independent Contractor under this contract. The City of Nashua shall not maintain any insurance on behalf of Independent Contractor. Subcontractors are subject to the same insurance requirements as Independent Contractor and it shall be the Independent Contractor’s responsibility to ensure compliance of this requirement.

Independent Contractor will provide the City of Nashua with certificates of insurance for coverage as listed below and endorsements affecting coverage required by the contract within ten calendar days after the City of Nashua issues the notice of award. The City of Nashua requires thirty days written notice of cancellation or material change in coverage. The certificates and endorsements for each insurance policy must be signed by a person authorized by the insurer and who is licensed by the State of New Hampshire. **General Liability and Auto Liability policies must name the City of Nashua as an additional insured** and reflect on the certificate of insurance. Independent Contractor is responsible for filing updated certificates of insurance with the City of Nashua’s Risk Management Department during the life of the contract.

- All deductibles and self-insured retentions shall be fully disclosed in the certificate(s) of insurance.
- If aggregate limits of less than $2,000,000 are imposed on bodily injury and property damage, Independent Contractor must maintain umbrella liability insurance of at least $1,000,000. All aggregates must be fully disclosed on the required certificate of insurance.
- The specified insurance requirements do not relieve Independent Contractor of its responsibilities or limit the amount of its liability to the City of Nashua or other persons, and Independent Contractor is encouraged to purchase such additional insurance, as it deems necessary.
- The insurance provided herein is primary, and no insurance held or owned by the City of Nashua shall be called upon to contribute to a loss.
12. INDEMNIFICATION Regardless of any coverage provided by any insurance, Independent Contractor agrees to indemnify and hold harmless the City of Nashua, its agents, officials, employees and authorized representatives and their employees from and against any and all suits, causes of action, legal or administrative proceedings, arbitrations, claims, demands, damages, liabilities, interest, reimbursement of reasonable attorney's fees, costs and expenses of any kind or nature in any manner caused, occasioned, or contributed to in whole or in part by reason of any negligent act, omission, or fault or willful misconduct, whether active or passive, of Independent Contractor or of anyone acting under its direction or control or on its behalf in connection with or incidental to the performance of this contract. Independent Contractor's indemnity, and hold harmless obligations, or portions thereof, shall not apply to liability caused by the sole negligence or willful misconduct of the party indemnified or held harmless.

13. FISCAL CONTINGENCY All payments under this contract are contingent upon the availability to the City of Nashua of the necessary funds. This contract shall terminate and the City of Nashua's obligations under it shall be extinguished at the end of any fiscal year in which the City of Nashua fails to appropriate monies for the ensuing fiscal year sufficient for the performance of this contract. Nothing in this contract shall be construed to provide Independent Contractor with a right of payment over any other entity. Any funds obligated by the City of Nashua under this contract that are not paid to Independent Contractor shall automatically revert to the City of Nashua's discretionary control upon the completion, termination, or cancellation of the agreement. The City of Nashua shall not have any obligation to re-award or to provide, in any manner, the unexpended funds to Independent Contractor. Independent Contractor shall have no claim of any sort to the unexpended funds.

14. COMPENSATION Review by the City of Nashua of Independent Contractor's submitted monthly invoice forms and progress reports for payment will be promptly accomplished by the City of Nashua. If there is insufficient information, the City of Nashua may require Independent Contractor to submit additional information. Unless the City of Nashua, in its sole discretion, decides otherwise, the City of Nashua shall pay Independent Contractor in full within 30 days of approval of the submitted monthly invoice forms and progress reports.

15. COMPLIANCE WITH APPLICABLE LAWS Independent Contractor, at all times, shall fully and completely comply with all applicable local, state and federal laws, statutes, regulations, ordinances, orders, or requirements of any sort in carrying out the obligations of this contract, including, but not limited to, all federal, state, and local accounting procedures and requirements, all immigration and naturalization laws, and the Americans With Disabilities Act. Independent Contractor shall, throughout the period services are to be performed under this contract, monitor for any changes to the applicable laws, statutes, regulations, ordinances, orders, or requirements, shall promptly notify the City of Nashua in writing of any changes to the same relating to or affecting this contract, and shall submit detailed documentation of any effect of the change in terms of both time and cost of performing the contract.

16. NONDISCRIMINATION If applicable or required under any federal or state law, statute, regulation, order, or other requirement, Independent Contractor agrees to the following terms. Independent Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. Independent Contractor agrees to take affirmative action to employ, advance in employment, or to otherwise treat qualified, handicapped individuals without discrimination based upon physical or mental handicap in all employment practices, including but
not limited to the following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, rates of pay, or other forms of compensation and selection for training, including apprenticeship.

Without limitation of the foregoing, Independent Contractor's attention is directed to Title 41 "Public Contracts and Property Management" C.F.R. Subtitle B "Other Provisions Relating to Public Contracts" Section 60 "Office of Federal Contract Compliance Programs, Equal Employment, Department of Labor" which, by this reference, is incorporated in this contract.

Independent Contractor agrees to assist disadvantaged business enterprises in obtaining business opportunities by identifying and encouraging disadvantaged suppliers, consultants, and subconsultants to participate to the extent possible, consistent with their qualification, quality of work, and obligation of Independent Contractor under this contract.

In connection with the performance of work under this contract, Independent Contractor agrees not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, or sexual orientation. This agreement includes, but is not 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.

Independent Contractor agrees, if applicable, to insert these provisions in all subcontracts, except for subcontracts for standard commercial supplies or raw materials. Any violation of any applicable provision by Independent Contractor shall constitute a material breach of the contract.

17. ENDORSEMENT Independent Contractor shall seal and/or stamp and sign professional documents including drawings, plans, maps, reports, specifications, and other instruments of service prepared by Independent Contractor or under its direction as required under the laws of the State of New Hampshire.

18. ASSIGNMENT, TRANSFER, DELEGATION, OR SUBCONTRACTING Independent Contractor shall not assign, transfer, delegate, or subcontract any rights, obligations, or duties under this contract without the prior written consent of the City of Nashua. Any such assignment, transfer, delegation, or subcontracting without the prior written consent of the City of Nashua is void. Any consent of the City of Nashua to any assignment, transfer, delegation, or subcontracting shall only apply to the incidents expressed and provided for in the written consent and shall not be deemed to be a consent to any subsequent assignment, transfer, delegation, or subcontracting. Any such assignment, transfer, delegation, or subcontract shall require compliance with or shall incorporate all terms and conditions set forth in this agreement, including all incorporated Exhibits and written amendments or modifications. Subject to the foregoing provisions, the contract inures to the benefit of, and is binding upon, the successors and assigns of the parties.

19. CITY INSPECTION OF CONTRACT MATERIALS The books, records, documents and accounting procedures and practices of Independent Contractor related to this contract shall be subject to inspection, examination and audit by the City of Nashua, including, but not limited to, the contracting agency, the Board of Public Works, Corporation Counsel, and, if applicable, the Comptroller General of the United States, or any authorized representative of those entities.

20. DISPOSITION OF CONTRACT MATERIALS Any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials, including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Independent Contractor in the performance of its obligations under this contract shall be the exclusive property of the City of Nashua and all such materials shall be remitted and delivered, at Independent Contractor's expense, by Independent Contractor to the City of Nashua upon completion,
termination, or cancellation of this contract. Alternatively, if the City of Nashua provides its written approval to Independent Contractor, any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Independent Contractor in the performance of its obligations under this contract must be retained by Independent Contractor for a minimum of four years after final payment is made and all other pending matters are closed. If, at any time during the retention period, the City of Nashua, in writing, requests any or all of the materials, then Independent Contractor shall promptly remit and deliver the materials, at Independent Contractor’s expense, to the City of Nashua. Independent Contractor shall not use, willingly allow or cause to have such materials used for any purpose other than the performance of Independent Contractor’s obligations under this contract without the prior written consent of the City of Nashua.

21. PUBLIC RECORDS LAW, COPYRIGHTS, AND PATENTS Independent Contractor expressly agrees that all documents ever submitted, filed, or deposited with the City of Nashua by Independent Contractor (including those remitted to the City of Nashua by Independent Contractor pursuant to paragraph 20), unless designated as confidential by a specific statute of the State of New Hampshire, shall be treated as public records and shall be available for inspection and copying by any person, or any governmental entity.

No books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Independent Contractor in the performance of its obligations under this contract shall be the subject of any application for a copyright or patent by or on behalf of Independent Contractor. The City of Nashua shall have the right to reproduce any such materials.

Independent Contractor expressly and indefinitely waives all of its rights to bring, including but not limited to, by way of complaint, interpleader, intervention, or any third party practice, any claims, demands, suits, actions, judgments, or executions, for damages or any other relief, in any administrative or judicial forum, against the City of Nashua or any of its officers or employees, in either their official or individual capacity of the City of Nashua, for violations of or infringement of the copyright or patent laws of the United States or of any other nation. Independent Contractor agrees to indemnify, to defend, and to hold harmless the City of Nashua, its representatives, and employees from any claim or action seeking to impose liability, costs, and attorney fees incurred as a result of or in connection with any claim, whether rightful or otherwise, that any material prepared by or supplied to Independent Contractor infringes any copyright or that any equipment, material, or process (or any part thereof) specified by Independent Contractor infringes any patent.

Independent Contractor shall have the right, in order to avoid such claims or actions, to substitute at its expense non-infringing materials, concepts, products, or processes, or to modify such infringing materials, concepts, products, or processes so they become non-infringing, or to obtain the necessary licenses to use the infringing materials, concepts, products, or processes, provided that such substituted or modified materials, concepts, products, or processes shall meet all the requirements and be subject to all the terms and conditions of this contract.

22. FINAL ACCEPTANCE Upon completion of all work under the contract, Independent Contractor shall notify the City of Nashua in writing of the date of the completion of the work and request confirmation of the completion from the City of Nashua. Upon receipt of the notice, the City of Nashua shall confirm to Independent Contractor in writing that the whole of the work was completed on the date indicated in the notice or provide Independent Contractor with a written list of work not completed. With respect to work listed by the City of Nashua as incomplete, Independent Contractor shall promptly complete the work and the final acceptance procedure.
shall be repeated. The date of final acceptance of a project by the City of Nashua shall be the date upon which the Board of Public Works or other designated official accepts and approves the notice of completion.

23. TAXES Independent Contractor shall pay all taxes, levies, duties, and assessments of every nature due in connection with any work performed under the contract and make any and all payroll deductions required by law. The contract sum and agreed variations to it shall include all taxes imposed by law. Independent Contractor hereby indemnifies and holds harmless the City of Nashua from any liability on account of any and all such taxes, levies, duties, assessments, and deductions.

24. NON-WAIVER OF TERMS AND CONDITIONS None of the terms and conditions of this contract shall be considered waived by the City of Nashua. There shall be no waiver of any past or future default, breach, or modification of any of the terms and conditions of the contract unless expressly stipulated to by the City of Nashua in a written waiver.

25. RIGHTS AND REMEDIES The duties and obligations imposed by the contract and the rights and remedies available under the contract shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

26. PROHIBITED INTERESTS Independent Contractor shall not allow any officer or employee of the City of Nashua to have any indirect or direct interest in this contract or the proceeds of this contract. Independent Contractor warrants that no officer or employee of the City of Nashua has any direct or indirect interest, whether contractual, noncontractual, financial or otherwise, in this contract or in the business of Independent Contractor. If any such interest comes to the attention of Independent Contractor at any time, a full and complete disclosure of the interest shall be immediately made in writing to the City of Nashua. Independent Contractor also warrants that it presently has no interest and that it will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. Independent Contractor further warrants that no person having such an interest shall be employed in the performance of this contract. If City of Nashua determines that a conflict exists and was not disclosed to the City of Nashua, it may terminate the contract at will or for cause in accordance with paragraph 8.

In the event Independent Contractor (or any of its officers, partners, principals, or employees acting with its authority) is convicted of a crime involving a public official arising out or in connection with the procurement of work to be done or payments to be made under this contract, City of Nashua may terminate the contract at will or for cause in accordance with paragraph 8. Upon termination, Independent Contractor shall refund to the City of Nashua any profits realized under this contract, and Independent Contractor shall be liable to the City of Nashua for any costs incurred by the City of Nashua in completing the work described in this contract. At the discretion of the City of Nashua, these sanctions shall also be applicable to any such conviction obtained after the expiration or completion of the contract.

Independent Contractor warrants that no gratuities (including, but not limited to, entertainment or gifts) were offered or given by Independent Contractor to any officer or employee of the City of Nashua with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending or making of any determinations with respect to the performance of this contract. If City of Nashua determines that such gratuities were or offered or given, it may terminate the contract at will or for cause in accordance with paragraph 8.

The rights and remedies of this section shall in no way be considered for be construed as a waiver of any other rights or remedies available to the City of Nashua under this contract or at law.
27. **Third Party Interests and Liabilities**  The City of Nashua and Independent Contractor, including any of their respective agents or employees, shall not be liable to third parties for any act or omission of the other party. This contract is not intended to create any rights, powers, or interest in any third party and this agreement is entered into for the exclusive benefit of the City of Nashua and Independent Contractor.

28. **Survival of Rights and Obligations**  The rights and obligations of the parties that by their nature survive termination or completion of this contract shall remain in full force and effect.

29. **Severability**  In the event that any provision of this contract is rendered invalid or unenforceable by any valid act of Congress or of the New Hampshire legislature or any court of competent jurisdiction, or is found to be in violation of state statutes or regulations, the invalidity or unenforceability of any particular provision of this contract shall not affect any other provision, the contract shall be construed as if such invalid or unenforceable provisions were omitted, and the parties may renegotiate the invalid or unenforceable provisions for sole purpose of rectifying the invalidity or unenforceability.

30. **Modification of Contract and Entire Agreement**  This contract constitutes the entire contract between the City of Nashua and Independent Contractor. The parties shall not be bound by or be liable for any statement, representation, promise, inducement, or understanding of any kind or nature not set forth in this contract. No changes, amendments, or modifications of any terms or conditions of the contract shall be valid unless reduced to writing and signed by both parties.

31. **Choice of Law and Venue**  This contract shall be governed exclusively by the laws of the State of New Hampshire and any claim or action brought relating to this contract, the work performed or contracted to be performed thereunder, or referable in anyway thereto shall be brought in Hillsborough County (New Hampshire) Superior Court Southern Judicial District or in the New Hampshire 9th Circuit Court—Nashua and not elsewhere.
Scope of Services
IFB0265-022019
2019 Asphalt Testing

Project Site: Various Locations
Nashua, New Hampshire 03062

The City of Nashua is hiring contractors to pave certain streets in the city. In order to provide quality control, the professional services of an independent asphalt testing agency are required.

The contract is expected to start as early as **Wednesday, April 17, 2019.** The contract completion date is **Thursday, October 31, 2019.**

Engineer:
City of Nashua, NH
Mandeep Gill
9 Riverside St, Nashua, NH 03060
(603) 589-3123
gillm@NashuaNH.gov

Scope of Services:

In 2019, City of Nashua plans to pave approximately 11.76 miles of arterial roads/major roads and 11.43 miles of local/residential streets. The project includes the placement of approximately 84,072 tons of hot mix asphalt and 4,650 tons of high strength hot mix asphalt.

Testing:

The testing agency shall provide all labor, materials, and equipment required to test loose samples at the hot-mix supplier production plant for gradation and binder content, and cores for percent compaction in accordance with the following standards:

- Monitor and report on batching procedures and document materials batched into the mix.
- Gradation Testing (loose sample from plant) – AASHTO T30, NHDOT B-1.
- Binder/Asphalt Content Testing (loose sample from plant) – AASHTO T164, NHDOT B-2, NHDOT B-6.
- Bulk Density (6” diameter core will be collected by paving contractor) - AASHTO T166, AASHTO T269.
- Theoretical Maximum Density (6” diameter core will be collected by paving contractor) - AASHTO T209, AASHTO T269.
The testing agency will perform inspections at the plant during all paving operations. In addition to performing testing as described above, the technician assigned to plant inspections shall observe all materials and observe the hot-mix batching process.

The testing agency shall submit sample test result forms for review by the Engineer two weeks after Notice to Proceed. Content and format of those forms must be approved by the Engineer prior to receiving actual results.

To the extent practical tests shall be performed while technician is at the plant. Payment items are provided for tests performed at the plant, as well as tests performed at the Contractor’s laboratory.

Results for both in-plant and core testing shall include name of street where sample was taken (if appropriate), date when sample was taken, sublot number, aggregate max stone size, mix design used, and station and offset (if appropriate). Result information shall include percent binder content, percent compaction, gradation test, and an image of the core with a measurement of thickness. Final results shall be clearly marked. Results shall be compared to approved mix designs and specifications. A column clearly indicating passing or failing results shall be provided.

Test results shall be provided to the City within 5 calendar days from asphalt pickup. Results received after 5 calendar days will not be accepted.

Testing and inspections shall be performed by qualified technicians and shall be in accordance with the relevant provisions of the latest version of the NHDOT standard specifications.

The tables listed below are attached and list the street. Streets are subject to change and contract will be adjusted accordingly.

- Table 1: 2019 Paving Program – Arterial Roadways Paving List
- Table 2: 2019 Paving Program – Local Roadways Paving List

Payment for testing will be per each (Ea) and shall include all materials, labor, and equipment necessary to complete that portion of the bid schedule. One payment will be made for each gradation, binder content, bulk density, and theoretical maximum density test result received within the specified time frame in the format approved by the Engineer.

**In-Plant Testing Technician Certification/Qualification:**
The technician performing the HMA sampling and testing is required to have a "NETTCP HMA Plant Technician. The technician will obtain samples at the plant at a frequency of 1 test per 750 tons. Plant samples will be used to perform gradation & asphalt content test (AASHTO T130 & T164). In addition the technician will
periodically observe HMA batching process and monitor the portions of materials in the HMA mixture and compare the results to the approved job mix formula.

The qualifications of the technicians assigned to the contract shall be submitted for approval and the City reserves the right to disapprove individual technicians.

**Asphalt Pickup:**

Asphalt pick up shall include all materials, labor, equipment, and transportation necessary to pick up asphalt samples and transport them back to the lab for testing. Samples will include loose asphalt and 6" cores. The pickup location will be at 9 Riverside St, Nashua, NH 03062. Samples will be picked up no later than 24 hours after the request to pick them up and shall be delivered to the lab for testing within 24 hours of pickup.

The individual picking up the samples will be required to sign a document certifying they were received. Any samples lost or damaged will be retaken by the testing agency at no cost to the City.

Payment for asphalt pickup will be per each (Ea) and include all materials, labor, equipment, and transportation necessary to complete that portion of the bid schedule.

**Invoicing:**

Contractor shall submit an invoice once per month. Invoices must include an accounting of all bid form items being billed for that month as well as a running total of all items billed in previous months. Items in the invoice that are not on the bid form will not be paid. The testing agency shall submit sample invoice form for review by the Engineer two weeks after the Preconstruction Meeting. For more details, please refer general conditions.
<table>
<thead>
<tr>
<th>Street Name</th>
<th>From</th>
<th>To</th>
<th>Road Length</th>
<th>Tonnage</th>
<th>No. of Cores needed (tonnage/50 tons)</th>
<th>No. of Cores collected (rounded off)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allis Street</td>
<td>Main St</td>
<td>East Hollis St</td>
<td>5,084</td>
<td>4,388</td>
<td>5.85</td>
<td>6.00</td>
</tr>
<tr>
<td>Amherst Street-1</td>
<td>Somerset Pkwy</td>
<td>Deerwood Dr</td>
<td>4,129</td>
<td>4,338</td>
<td>5.78</td>
<td>6.00</td>
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<tr>
<td>Amherst Street-2</td>
<td>Deerwood Dr</td>
<td>400'S of Cellu</td>
<td>3,063</td>
<td>3,214</td>
<td>4.29</td>
<td>5.00</td>
</tr>
<tr>
<td>Amherst Street-3</td>
<td>400'S of Cellu</td>
<td>City Line</td>
<td>2,980</td>
<td>3,113</td>
<td>4.15</td>
<td>5.00</td>
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<td>Canal Street-1</td>
<td>Main St</td>
<td>Orange St</td>
<td>452</td>
<td>311</td>
<td>0.41</td>
<td>1.00</td>
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<tr>
<td>Canal Street-2</td>
<td>Orange St</td>
<td>Howard Ct</td>
<td>890</td>
<td>829</td>
<td>1.11</td>
<td>2.00</td>
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<tr>
<td>Canal Street-3</td>
<td>Howard Ct</td>
<td>Amory St</td>
<td>1,893</td>
<td>1,837</td>
<td>2.45</td>
<td>3.00</td>
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<tr>
<td>East Hollis Street (EB)-6</td>
<td>East Hollis</td>
<td>Bridge St EB</td>
<td>460</td>
<td>212</td>
<td>1.00</td>
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<tr>
<td>East Hollis Street (WB)-7</td>
<td>Bridge Street WB</td>
<td>E. Hollis</td>
<td>702</td>
<td>427</td>
<td>0.57</td>
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<tr>
<td>East Hollis Street-2</td>
<td>Marshall St</td>
<td>Allis St</td>
<td>1,143</td>
<td>1,067</td>
<td>1.42</td>
<td>2.00</td>
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<tr>
<td>East Hollis Street-3</td>
<td>Allis St</td>
<td>Temple St</td>
<td>802</td>
<td>416</td>
<td>0.56</td>
<td>1.00</td>
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<tr>
<td>East Hollis Street-4</td>
<td>Temple St</td>
<td>East Hollis EB</td>
<td>841</td>
<td>794</td>
<td>1.06</td>
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</tr>
<tr>
<td>East Hollis Street-5</td>
<td>East Hollis EB</td>
<td>Crown St</td>
<td>896</td>
<td>249</td>
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<td>1.00</td>
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<tr>
<td>Kinsley Street-1</td>
<td>Main Dunstable Rd</td>
<td>Ritter St</td>
<td>5,363</td>
<td>4,510</td>
<td>6.01</td>
<td>7.00</td>
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<td>Kinsley Street-2</td>
<td>Ritter St</td>
<td>Hanover St</td>
<td>527</td>
<td>450</td>
<td>0.60</td>
<td>1.00</td>
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<tr>
<td>Lake Street-2</td>
<td>Almont St</td>
<td>Linwood St</td>
<td>597</td>
<td>423</td>
<td>0.56</td>
<td>1.00</td>
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<td>Lake Street-3</td>
<td>Linwood St</td>
<td>Pine St</td>
<td>1,835</td>
<td>1,384</td>
<td>1.84</td>
<td>2.00</td>
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<tr>
<td>Lake Street-4</td>
<td>Pine St</td>
<td>Vine St</td>
<td>915</td>
<td>664</td>
<td>0.88</td>
<td>1.00</td>
</tr>
<tr>
<td>Lake Street-5</td>
<td>Vine St</td>
<td>Main St</td>
<td>1,401</td>
<td>728</td>
<td>0.97</td>
<td>1.00</td>
</tr>
<tr>
<td>Main Dunstable Road 2</td>
<td>FE Everett Turnpike</td>
<td>Kinsley St</td>
<td>1,433</td>
<td>502</td>
<td>0.67</td>
<td>1.00</td>
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<tr>
<td>Main Dunstable Road 3A (NB)</td>
<td>West Hollis St</td>
<td>Instable Rd 3B548'S of West Ho</td>
<td>776</td>
<td>307</td>
<td>0.41</td>
<td>1.00</td>
</tr>
<tr>
<td>Main Dunstable Road 3A (SB)</td>
<td>West Hollis St</td>
<td>Instable Rd 3B548'S of West Ho</td>
<td>548</td>
<td>275</td>
<td>0.37</td>
<td>1.00</td>
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<tr>
<td>Main Dunstable Road 4</td>
<td>Conant Rd</td>
<td>Main Dunstable Rd 3B</td>
<td>3,042</td>
<td>3,077</td>
<td>4.10</td>
<td>5.00</td>
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<tr>
<td>Main Dunstable Road 5</td>
<td>Gregg Rd</td>
<td>Whitford Rd</td>
<td>6,168</td>
<td>4,108</td>
<td>5.48</td>
<td>6.00</td>
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<tr>
<td>Pine Hill Road-1</td>
<td>Indian Rock Rd</td>
<td>Blue Hill Ave</td>
<td>6,460</td>
<td>7,045</td>
<td>9.39</td>
<td>10.00</td>
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<tr>
<td>Spit Brook Road-1</td>
<td>EB Tara Blvd</td>
<td>Newcastle Dr</td>
<td>1,295</td>
<td>989</td>
<td>1.32</td>
<td>2.00</td>
</tr>
<tr>
<td>Spit Brook Road-2</td>
<td>WB Tara Blvd</td>
<td>Newcastle Dr</td>
<td>1,293</td>
<td>1,053</td>
<td>1.40</td>
<td>2.00</td>
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<tr>
<td>Spit Brook Road-3</td>
<td>Newcastle Dr</td>
<td>175'E of Whitegate</td>
<td>1,042</td>
<td>1,471</td>
<td>1.96</td>
<td>2.00</td>
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<tr>
<td>Spit Brook Road-4</td>
<td>175'E of Whitegate</td>
<td>D.W. Highway</td>
<td>668</td>
<td>523</td>
<td>0.70</td>
<td>1.00</td>
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<tr>
<td>West Hollis St - 2B(East of Turn)</td>
<td>Simon St</td>
<td>Dead End (House #385)</td>
<td>1,143</td>
<td>934</td>
<td>1.24</td>
<td>2.00</td>
</tr>
<tr>
<td>West Hollis St - 3(West of Turn)</td>
<td>100'S of Marina St</td>
<td>End(Hollis Town Line)</td>
<td>4,243</td>
<td>1,988</td>
<td>2.65</td>
<td>3.00</td>
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</table>

LENGTH 11.76   51,623.39

Assume 100 cores are needed 85
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<thead>
<tr>
<th>Item No.</th>
<th>Estimated Quantity</th>
<th>Units</th>
<th>Item Description</th>
<th>Unit Price in figures</th>
<th>Total Price in figures</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>160</td>
<td>EA</td>
<td>Gradation Test (1 test at plant/750 tons)</td>
<td>Zero Dollars and Zero Cents $0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>B</td>
<td>160</td>
<td>EA</td>
<td>Binder/Asphalt Content Test (1 test at plant/750 tons)</td>
<td>Zero Dollars and Zero Cents $0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>C</td>
<td>120</td>
<td>EA</td>
<td>Bulk Density Test (Cores will be collected by Paving Contractor; During Plant Inspection)</td>
<td>Zero Dollars and Zero Cents $0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>D</td>
<td>120</td>
<td>EA</td>
<td>Theoretical Maximum Density Test [Cores will be collected by Paving Contractor; During Plant Inspection]</td>
<td>Zero Dollars and Zero Cents $0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>E</td>
<td>40</td>
<td>EA</td>
<td>Bulk Density Test (Cores will be collected by Paving Contractor; At Contractor's Lab)</td>
<td>Twenty Five Dollars and Zero Cents $25.00</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>F</td>
<td>40</td>
<td>EA</td>
<td>Theoretical Maximum Density Test (Cores will be collected by Paving Contractor; At Contractor's Lab)</td>
<td>Ninety Five Dollars and Zero Cents $95.00</td>
<td>$3,800.00</td>
</tr>
<tr>
<td>G</td>
<td>40</td>
<td>EA</td>
<td>Asphalt Pickup (from DPW Office)</td>
<td>Fifty Dollars and Zero Cents $50.00</td>
<td>$2,000.00</td>
</tr>
<tr>
<td>H</td>
<td>590</td>
<td>Hrs</td>
<td>HMA Plant Technician for plant inspection &amp; testing (Include mileage)</td>
<td>Sixty Five Dollars and Zero Cents $70.00</td>
<td>$41,300.00</td>
</tr>
<tr>
<td>I</td>
<td>1</td>
<td></td>
<td>Lump Sum Project Manager Oversight</td>
<td>Dollars and Zero Cents $500.00</td>
<td>$500.00</td>
</tr>
</tbody>
</table>

**TOTAL BID PRICE FIGURES** $48,600

**TOTAL OF BID ITEMS** (words) 
Forty Eight Thousand Six Hundred dollars and

Contractor: S. W. Cole Engineering, Inc.

Authorized Signature: [Signature]

Date: February 20, 2019

Address: 13 Delta Drive #8, Londonderry, New Hampshire 03053

Email: amichaud@swcole.com

Page 1 of 1
March 14, 2019
Memo #19-135

TO:       MAYOR DONCHESS  
           FINANCE COMMITTEE

SUBJECT:  WET WEATHER FACILITY SCREENING UPGRADE – DESIGN AND BIDDING PHASE  
           (VALUE: NOT-TO-EXCEED $178,000)  
           DEPARTMENT: 169 WASTEWATER; FUND: WASTEWATER

Please see the attached communication from David L. Boucher, Superintendent Wastewater Department dated February 28, 2019 for the information related to this contract.

§ 5-83. Professional services. In the purchase of accounting, architectural, auditing, engineering, legal, medical and ambulance services and purchases of independent professional consultant services for personnel, data processing, actuarial, planning, management and other comparable purchases competitive bidding shall not be required. Competitive bidding is required in the procurement of insurance agents and consultants.

This funding is contingent upon the approval of bonds for these funds.

The Superintendent Wastewater Department, the Board of Public Works (February 28, 2019 meeting) and the Purchasing Department recommend the award of this contract in an amount not to exceed $178,000 from Wright Pierce of Portsmouth, NH.

Respectfully,

[Signature]

Dan Kooker
Purchasing Manager

Cc:  D Boucher    L Fautuex
City of Nashua, Public Works Division

To: Board of Public Works

Meeting Date: February 28, 2019

From: David L. Boucher, Superintendent
Wastewater Department

Re: Wet Weather Facility Screening Upgrade – Design and Bidding Phase

B. Motion: To approve the contract with Wright Pierce for professional design and bidding phase services for the Wet Weather Facility Screening Upgrade in an amount not to exceed $178,000. Funding will be through: Department: 169 - Wastewater; Fund: Wastewater; Activity: Wet Weather Upgrade.

Attachments: Wright Pierce Proposal

Discussion: The Wet Weather Facility located at 2 Sawmill Road in Nashua is designed to treat flows at the wastewater facility above 50 million gallons per day. Over the years, the facility has experience issues with its two influent screens. Parts of the screen fields have become bowed allowing large material to pass through and clog pumps within the Wet Weather Facility. Another issue is that the rake mechanisms do not remove debris properly from the screen field allowing flow to back-up into the interceptor creating other issues and causing the Wet Weather Facility to be ineffective. Several interim solutions have been tried to correct the issues with little success.

Wright Pierce was hired to do a preliminary investigation of the Wet Weather screening area and determined new screens are needed. We are ready to proceed with the design phase of this project and have asked Wright Pierce to continue with this effort.

Wright Pierce has done a number of projects at the wastewater facility since 2012 in a satisfactory manner. There cost of $178,000 is reasonable for the scope of work involved. The construction cost to upgrade the screens will be determined by Wright Pierce, but are estimated to cost around 2.2 million dollars. Their cost is less than 10% of the estimated construction cost; which is very reasonable for design and bidding services.
RESOLUTION

CHANGING THE USE OF FUNDS FOR A WASTEWATER FUND CAPITAL IMPROVEMENTS PROJECT FROM BRIDGE STREET OVERFLOW DETENTION BASIN IMPROVEMENTS TO WET WEATHER FACILITY SCREEN AND RAKE UPGRADES

CITY OF NASHUA

In the Year Two Thousand and Nineteen

WHEREAS, the City of Nashua’s FY 2014 budget included a Wastewater Fund capital improvement project entitled “Bridge Street Overflow Detention Basin Improvements” in an FY14 amount of $890,000, and the City of Nashua’s FY 2015 budget included the same Wastewater Fund capital improvement project in a FY15 amount of $1,700,000, thus authorizing a total of $2,590,000 to be spent on this project; and

WHEREAS, this detention basin improvements project is not going to be done at this time, and the Division of Public Works has an immediate need to start work on a different Wastewater Fund capital improvement project.

NOW, THEREFORE, BE IT RESOLVED by the Board of Aldermen of the City of Nashua that $2,000,000 of the amount previously approved for Wastewater Fund capital improvement project “Bridge Street Overflow Detention Basin Improvements” is instead approved to be used for the “Wet Weather Facility Screen and Rake Upgrades” project.
RESOLUTION: R-19-117

PURPOSE: Changing the use of funds for a wastewater capital improvement project from Bridge Street Overflow Detention Basin Improvements to Wet Weather Facility Screen and Rake Upgrades

ENDORSERS: Mayor Jim Donchess

COMMITTEE ASSIGNMENT:

FISCAL NOTE: None.

ANALYSIS

This resolution changes the use of previously approved (FY2014 and FY2015) Wastewater Fund Capital Improvement Project funds in the amount of $2,000,000 from Bridge Street Overflow Detention Basin Improvements to Wet Weather Facility Screen and Rake Upgrades.

The Wastewater “Screen and Rake Upgrades” project is in the FY2020 Capital Improvements Program.

This legislation should be referred to the Board of Public Works for review and approval.

Approved as to account structure, numbers, and amount:

Financial Services Division
By: [Signature]

Approved as to form:
Office of Corporation Counsel
By: [Signature]
Date: 5 March 2019
CONTRACT FOR PROFESSIONAL SERVICES

WET WEATHER FACILITY SCREENING UPGRADE
DESIGN AND BIDDING PHASE

A CONTRACT BETWEEN

THE CITY OF NASHUA, 229 MAIN STREET, CITY HALL, NASHUA, NH 03060
AND

WRIGHT-PIERCE
and its successors, transferees and assignees (together “Professional Engineer”)

NAME AND TITLE OF PROFESSIONAL ENGINEER

230 COMMERCIAL WAY, SUITE 302, PORTSMOUTH, NH 03801
ADDRESS OF PROFESSIONAL ENGINEER

WHEREAS, the City of Nashua, a political subdivision of the State of New Hampshire, from time
to time requires the services of a Professional Engineer; and

WHEREAS, it is deemed that the services of a Professional Engineer herein specified are both
necessary and desirable and in the best interests of the City of Nashua; and

WHEREAS, Professional Engineer represents they are duly qualified, equipped, staffed, ready,
willing and able to perform and render the services hereinafter described;

NOW, THEREFORE, in consideration of the agreements herein made, the parties mutually agree as
follows:

1. DOCUMENTS INCORPORATED. The following exhibits are by this reference incorporated herein and
are made part of this contract:

   Exhibit A—General Conditions for Contracts
   Exhibit B—Scope of Services, Contract Time, Fee Schedule

The Contract represents the entire and integrated agreement between the parties and supersedes prior
negotiations, proposals, representations or agreements, either written or oral. Any other documents which
are not listed in this Article are not part of the Contract.

In the event of a conflict between the terms of the Proposal and the terms of this Agreement, a written
change order and/or fully executed City of Nashua Purchase Order, the terms of this Agreement, the
written change order or the fully executed City of Nashua Purchase Order shall control over the terms of
the Proposal.

2. WORK TO BE PERFORMED Except as otherwise provided in this contract, Professional Engineer shall
furnish all services, equipment, and materials and shall perform all operations necessary and required to
carry out and perform in accordance with the terms and conditions of the contract the work described.
3. **PERIOD OF PERFORMANCE.** Professional Engineer shall perform and complete all work within 180 days of receiving authorization to proceed from City of Nashua contingent on the City and New Hampshire Department of Environmental Services (DIVISION) completing all reviews with in the time frames outlined in EXHIBIT B, and shall only be altered by the parties by a written agreement to extend the period of performance or by termination in accordance with the terms of the contract. Professional Engineer shall begin performance upon receipt of an Executed Contract and a valid Purchase Order issued from the City of Nashua.

4. **COMPENSATION.** Professional Engineer agrees to perform the work for a total cost not to exceed

   **ONE HUNDRED SEVENTY-EIGHT THOUSAND DOLLARS ($178,000.00)**

The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work.

Unless Professional Engineer has received a written exemption from the City of Nashua, Professional Engineer shall submit monthly requests for payment for services performed under this agreement in accordance with the values stated in the Agreement. Such requests shall be supported by such data substantiating the Professional Engineer’s right to payment as the City of Nashua may reasonably require. Professional Engineer shall submit monthly requests for payment for services performed under this agreement shall be submitted as follows:

- Electronically via email to VendorAPInvoices@NashuaNH.gov

  **OR**

- Paper Copies via US Mail to:

  
  City of Nashua, City Hall  
  Accounts Payable  
  229 Main Street  
  Nashua, NH 03060

*Please do not submit invoices both electronically and paper copy.*

In addition, and to facilitate the proper and timely payment of applications, the City of Nashua requires that all submitted invoices contain a valid **PURCHASE ORDER NUMBER.**

Requests for payment shall be submitted no later than fifteen (15) days after the end of each month and must include a detailed summary of the expenditures reported in a form that supports the approved budget. Specifically, Professional Engineer agrees to provide the following with each request for payment:

1. Appropriate invoice forms. The forms shall include the project purchase order number, a listing of personnel hours and billing rates, and other expenditures for which payment is sought.

2. A progress report. The report shall include, for each monthly reporting period, a description of the work accomplished, problems experienced, upcoming work, any extra work carried out, and a schedule showing actual expenditures billed for the period, cumulative total expenditures billed and paid to date under the contract, and a comparison of cumulative total expenditures billed and paid to the approved budget.
The City of Nashua will pay for work satisfactorily completed by Professional Engineer. The City of Nashua will pay Professional Engineer within 30 days of approval by the City of Nashua of the submitted invoice forms and progress reports. The City of Nashua will make no payments until the invoice forms and progress reports have been submitted and approved.

5. **Effective Date of Contract.** This contract shall not become effective upon the date of execution by the City of Nashua.

6. **Notices.** All notices, requests, or approvals required or permitted to be given under this contract shall be in writing, shall be sent by hand delivery, overnight carrier, or by United States mail, postage prepaid, and registered or certified, and shall be addressed to:

**CITY OF NASHUA REPRESENTATIVE:**
David Boucher, Superintendent  
Nashua Wastewater Treatment Facility  
2 Sawmill Road  
Nashua, NH 03060

**REPRESENTATIVE:**
Jeffrey R. Pinnette, P.E.  
Wright-Pierce  
11 Bowdoin Mill Island, Suite 140  
Topsham, ME 04086

Any notice required or permitted under this contract, if sent by United States mail, shall be deemed to be given to and received by the addressee thereof on the third business day after being deposited in the mail. The City of Nashua or Professional Engineer may change the address or representative by giving written notice to the other party.

**IN WITNESS WHEREOF,** the parties hereto have caused this contract to be signed and intend to be legally bound thereby.

\[\text{City of Nashua, NH (signature)}\]  \[\text{Wright-Pierce (signature)}\]

\[\text{James Donchess, Mayor (Printed Name and Title)}\]

\[\text{(Printed Name and Title)}\]

\[\text{Date}\]  \[\text{Date}\]

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General Terms and Conditions

1. **Definitions** Unless otherwise required by the context, "Professional Engineer", and its successors, transferees and assignees (together "Professional Engineer") includes any of the Professional Engineer's consultants, sub consultants, contractors, and subcontractors.

2. **Professional Engineer Status** The parties agree that Professional Engineer shall have the status of and shall perform all work under this contract as a Professional Engineer, maintaining control over all its consultants, sub consultants, contractors, or subcontractors. The only contractual relationship created by this contract is between the City of Nashua and Professional Engineer, and nothing in this contract shall create any contractual relationship between the City of Nashua and Professional Engineer's consultants, sub consultants, contractors, or subcontractors. The parties also agree that Professional Engineer is not a City of Nashua employee and that there shall be no:

   (1) Withholding of income taxes by the City of Nashua;
   (2) Industrial insurance coverage provided by the City of Nashua;
   (3) Participation in group insurance plans which may be available to employees of the City of Nashua;
   (4) Participation or contributions by either the Professional Engineer or the City of Nashua to the public employee's retirement system;
   (5) Accumulation of vacation leave or sick leave provided by the City of Nashua;
   (6) Unemployment compensation coverage provided by the City of Nashua.

3. **Standard of Care** Professional Engineer shall be responsible for the professional quality, technical accuracy, timely completion, and coordination of all work performed under this contract. Professional Engineer warrants that all work shall be performed with the degree of professional skill, care, diligence, and sound practices and judgment that are normally exercised by recognized professional firms with respect to services of a similar nature. It shall be the duty of Professional Engineer to assure at its own expense that all work is technically sound and in conformance with all applicable federal, state, and local laws, statutes, regulations, ordinances, orders, or other requirements. In addition to all other rights which the City of Nashua may have, Professional Engineer shall, at its own expense and without additional compensation, re-perform work to correct or revise any deficiencies, omissions, or errors in the work or the product of the work or which result from Professional Engineer's failure to perform in accordance with this standard of care. Any approval by the City of Nashua of any products or services furnished or used by Professional Engineer shall not in any way relieve Professional Engineer of the responsibility for professional and technical accuracy and adequacy of its work. City of Nashua review, approval, or acceptance of, or payment for any of Professional Engineer's work under this contract shall not operate as a waiver of any of the City of Nashua's rights or causes of action under this contract, and Professional Engineer shall be and remain liable in accordance with the terms of the contract and applicable law.

Professional Engineer shall furnish competent and skilled personnel to perform the work under this contract. The City of Nashua reserves the right to approve key personnel assigned by Professional Engineer to perform work under this contract. Approved key personnel shall not be taken off of the project by Professional Engineer without the prior written approval of the City of Nashua, except in the event of termination of employment. Professional Engineer shall, if requested to do so by the City of Nashua, remove from the job any personnel whom the City of Nashua determines to be incompetent, dishonest, or uncooperative.
4. CITY OF NASHUA REPRESENTATIVE The City of Nashua may designate a City of Nashua representative for this contract. If designated, all notices, project materials, requests by Professional Engineer, and any other communication about the contract shall be addressed or be delivered to the City of Nashua Representative.

5. CHANGES TO SCOPE OF WORK The City of Nashua may, at any time, by written order, make changes to the general scope, character, or cost of this contract and in the services or work to be performed, either increasing or decreasing the scope, character, or cost of Professional Engineer's performance under the contract. Professional Engineer shall provide to the City of Nashua within 10 calendar days, a written proposal for accomplishing the change. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Professional Engineer should proceed with any or all of the proposed change. If the change causes an increase or a decrease in Professional Engineer's cost or time required for performance of the contract as a whole, an equitable adjustment shall be made and the contract accordingly modified in writing. Any claim of Professional Engineer for adjustment under this clause shall be asserted in writing within 30 days of the date the City of Nashua notified Professional Engineer of the change.

When Professional Engineer seeks changes, Professional Engineer shall, before any work commences, estimate their effect on the cost of the contract and on its schedule and notify the City of Nashua in writing of the estimate. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Professional Engineer should proceed with any or all of the proposed change.

Except as provided in this paragraph, Professional Engineer shall implement no change unless the City of Nashua in writing approves the change. Unless otherwise agreed to in writing, the provisions of this contract shall apply to all changes. The City of Nashua may provide verbal approval of a change when the City of Nashua, in its sole discretion, determines that time is critical or public health and safety are of concern. Any verbal approval shall be confirmed in writing as soon as practicable. Any change undertaken without prior City of Nashua approval shall not be compensated and is, at the City of Nashua’s election, sufficient reason for contract termination.

6. CITY OF NASHUA COOPERATION The City of Nashua agrees that its personnel will cooperate with Professional Engineer in the performance of its work under this contract and that such personnel will be available to Professional Engineer for consultation at reasonable times and after being given sufficient advance notice that will prevent conflict with their other responsibilities. The City of Nashua also agrees to provide Professional Engineer with access to City of Nashua records in a reasonable time and manner and to schedule items that require action by the Board of Public Works and Finance Committee in a timely manner. The City of Nashua and Professional Engineer also agree to attend all meetings called by the City of Nashua or Professional Engineer to discuss the work under the Contract, and that Professional Engineer may elect to conduct and record such meetings and shall later distribute prepared minutes of the meeting to the City of Nashua.

7. DISCOVERY OF CONFLICTS, ERRORS, OMISSIONS, AMBIGUITIES, OR DISCREPANCIES Professional Engineer warrants that it has examined all contract documents, has brought all conflicts, errors, discrepancies, and ambiguities to the attention of the City of Nashua in writing, and has concluded that the City of Nashua's resolution of each matter is satisfactory to Professional Engineer. All future questions Professional Engineer may have concerning interpretation or clarification of this contract shall be submitted in writing to the City of Nashua within 10 calendar days of their arising. The writing shall state clearly and in full detail the basis for Professional Engineer's question or position. The City of Nashua representative shall render a
decision within 15 calendar days. The City of Nashua's decision on the matter is final. Any work
affected by a conflict, error, omission, or discrepancy which has been performed by Professional
Engineer prior to having received the City of Nashua's resolution shall be at Professional
Engineer's risk and expense. At all times, Professional Engineer shall carry on the work under
this contract and maintain and complete work in accordance with the requirements of the contract
or determination of the City of Nashua. Professional Engineer is responsible for requesting
clarification or interpretation and is solely liable for any cost or expense arising from its failure to
do so.

8. TERMINATION OF CONTRACT

A. TERMINATION, ABANDONMENT, OR SUSPENSION AT WILL. The City of Nashua, in its sole
discretion, shall have the right to terminate, abandon, or suspend all or part of the project and
contract at will. If the City of Nashua chooses to terminate, abandon, or suspend all or part of the
project, it shall provide Professional Engineer 10 day's written notice of its intent to do so.

If all or part of the project is suspended for more than 90 days, the suspension shall be treated as a
termination at will of all or part of the project and contract.

Upon receipt of notice of termination, abandonment, or suspension at will, Professional Engineer
shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Place no further orders or subcontracts for materials, services, or facilities, other than as
   may be necessary or required for completion of such portion of work under the contract
   that is not terminated.
3. Immediately make every reasonable effort to obtain cancellation upon terms
   satisfactory to the City of Nashua of all orders or subcontracts to the extent they relate
   to the performance of work terminated, abandoned, or suspended under the notice,
   assign to the City of Nashua any orders or subcontracts specified in the notice, and
   revoke agreements specified in the notice.
4. Not resume work after the effective date of a notice of suspension until receipt of a
   written notice from the City of Nashua to resume performance.

In the event of a termination, abandonment, or suspension at will, Professional Engineer shall
receive all amounts due and not previously paid to Professional Engineer for work satisfactorily
completed in accordance with the contract prior to the date of the notice and compensation for
work thereafter completed as specified in the notice. No amount shall be allowed or paid for
anticipated profit on unperformed services or other unperformed work.

B. TERMINATION FOR CAUSE This agreement may be terminated by the City of Nashua on 10
calendar day's written notice to Professional Engineer in the event of a failure by Professional
Engineer to adhere to any or all the terms and conditions of the contract or for failure to
satisfactorily, in the sole opinion of the City of Nashua, to complete or make sufficient progress
on the work in a timely and professional manner. Professional Engineer shall be given an
opportunity for consultation with the City of Nashua prior to the effective date of the termination.
Professional Engineer may terminate the contract on 10 calendar days written notice if, through
no fault of Professional Engineer, the City of Nashua fails to pay Professional Engineer for 45
days after the date of approval by the City of Nashua of any Application for Payment.

Upon receipt of notice of termination for cause, Professional Engineer shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Provide the City of Nashua with a list of all unperformed services.
3. Place no further orders or sub-contracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.

4. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the City of Nashua of all orders or subcontracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the City of Nashua any orders or subcontracts specified in the notice, and revoke agreements specified in the notice.

5. Not resume work after the effective date of a notice of termination unless and until receipt of a written notice from the City of Nashua to resume performance.

In the event of a termination for cause, Professional Engineer shall receive all amounts due and not previously paid to Professional Engineer for work satisfactorily completed in accordance with the contract prior to the date of the notice, less all previous payments. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work. Any such payment may be adjusted to the extent of any additional costs occasioned to the City of Nashua by reasons of Professional Engineer's failure. Professional Engineer shall not be relieved of liability to the City of Nashua for damages sustained from the failure, and the City of Nashua may withhold any payment to the Professional Engineer until such time as the exact amount of damages due to the City of Nashua is determined. All claims for payment by the Professional Engineer must be submitted to the City of Nashua within 30 days of the effective date of the notice of termination.

If after termination for the failure of Professional Engineer to adhere to any of the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the City of Nashua, to complete or make sufficient progress on the work in a timely and professional manner, it is determined that Professional Engineer had not so failed, the termination shall be deemed to have been a termination at will. In that event, the City of Nashua shall, if necessary, make an adjustment in the compensation paid to Professional Engineer such that Professional Engineer receives total compensation in the same amount as it would have received in the event of a termination-at-will.

C. GENERAL PROVISIONS FOR TERMINATION Upon termination of the contract, the City of Nashua may take over the work and prosecute it to completion by agreement with another party or otherwise. In the event Professional Engineer shall cease conducting business, the City of Nashua shall have the right to solicit applications for employment from any employee of the Professional Engineer assigned to the performance of the contract. Neither party shall be considered in default of the performance of its obligations hereunder to the extent that performance of such obligations is prevented or delayed by any cause, existing or future, which is beyond the reasonable control of such party. Delays arising from the actions or inactions of one or more of Professional Engineer's principals, officers, employees, agents, subcontractors, consultants, vendors, or suppliers are expressly recognized to be within Professional Engineer's control.

9. DISPUTE RESOLUTION The parties shall attempt to resolve any dispute related to this contract as follows. Either party shall provide to the other party, in writing and with full documentation to verify and substantiate its decision, its stated position concerning the dispute. No dispute shall be considered submitted and no dispute shall be valid under this provision unless and until the submitting party has delivered the written statement of its position and full documentation to the other party. The parties shall then attempt to resolve the dispute through good faith efforts and negotiation between the City of Nashua Representative and a Professional Engineer Representative. At all times, Professional Engineer shall carry on the work under this contract and maintain and complete work in accordance with the requirements of the contract or determination or direction of the City of Nashua. If the parties are unable to resolve their dispute
as described above within 30 days, the parties may request that the dispute be submitted to the Board of Public Works for resolution. If the parties are dissatisfied with the decision of the Board of Public Works, the parties’ reserve the right to pursue any available legal and/or equitable remedies for any breaches of this contract except as that right may be limited by the terms of this contract.

10. **NO DAMAGES FOR DELAY** Apart from a written extension of time, no payment, compensation, or adjustment of any kind shall be made to Professional Engineer for damages because of hindrances or delays in the progress of the work from any cause, and Professional Engineer agrees to accept in full satisfaction of such hindrances and delays any extension of time that the City of Nashua may provide.

11. **INSURANCE** Professional Engineer shall carry and maintain in effect during the performance of services under this contract:

> General Liability insurance in the amount of $1,000,000 per occurrence; $2,000,000 aggregate;
> $1,000,000 Combined Single Limit Automobile Liability;
  *Coverage must include all owned, non-owned and hired vehicles.*
> $1,000,000 Professional Liability;
> and Workers’ Compensation Coverage in compliance with the State of New Hampshire statutes, $100,000/$500,000/$100,000.

Professional Engineer shall maintain in effect at all times during the performance under this contract all specified insurance coverage with insurers. None of the requirements as to types and limits to be maintained by Professional Engineer are intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Professional Engineer under this contract. The City of Nashua shall not maintain any insurance on behalf of Professional Engineer. Subcontractors are subject to the same insurance requirements as Professional Engineer and it shall be the Professional Engineer’s responsibility to ensure compliance of this requirement.

Professional Engineer will provide the City of Nashua with certificates of insurance for coverage as listed below and endorsements affecting coverage required by the contract within ten calendar days after the City of Nashua issues the notice of award. The City of Nashua requires thirty days written notice of cancellation or material change in coverage. The certificates and endorsements for each insurance policy must be signed by a person authorized by the insurer and who is licensed by the State of New Hampshire. **General Liability and Auto Liability policies must name the City of Nashua as an additional insured** and reflect on the certificate of insurance. Professional Engineer is responsible for filing updated certificates of insurance with the City of Nashua’s Risk Management Department during the life of the contract.

> All deductibles and self-insured retentions shall be fully disclosed in the certificate(s) of insurance.
> If aggregate limits of less than $2,000,000 are imposed on bodily injury and property damage, Professional Engineer must maintain umbrella liability insurance of at least $1,000,000. All aggregates must be fully disclosed on the required certificate of insurance.
> The specified insurance requirements do not relieve Professional Engineer of its responsibilities or limit the amount of its liability to the City of Nashua or other persons, and Professional Engineer is encouraged to purchase such additional insurance, as it deems necessary.

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The insurance provided herein is primary, and no insurance held or owned by the City of Nashua shall be called upon to contribute to a loss.

Professional Engineer is responsible for and required to remedy all damage or loss to any property, including property of the City of Nashua, caused in whole or part by Professional Engineer or anyone employed, directed, or supervised by Professional Engineer.

12. INDEMNIFICATION Regardless of any coverage provided by any insurance, Professional Engineer agrees to indemnify and hold harmless the City of Nashua, its agents, officials, employees and authorized representatives and their employees from and against any and all suits, causes of action, legal or administrative proceedings, arbitrations, claims, demands, damages, liabilities, interest, reimbursement of reasonable attorney’s fees, costs and expenses of any kind or nature in any manner caused, occasioned, or contributed to in whole or in part by reason of any negligent act, omission, or fault or willful misconduct, whether active or passive, of Professional Engineer or of anyone acting under its direction or control or on its behalf in connection with or incidental to the performance of this contract. Professional Engineer’s indemnity, and hold harmless obligations, or portions thereof, shall not apply to liability caused by the sole negligence or willful misconduct of the party indemnified or held harmless.

13. FISCAL CONTINGENCY All payments under this contract are contingent upon the availability to the City of Nashua of the necessary funds. This contract shall terminate and the City of Nashua’s obligations under it shall be extinguished at the end of any fiscal year in which the City of Nashua fails to appropriate monies for the ensuing fiscal year sufficient for the performance of this contract.

Nothing in this contract shall be construed to provide Professional Engineer with a right of payment over any other entity. Any funds obligated by the City of Nashua under this contract that are not paid to Professional Engineer shall automatically revert to the City of Nashua’s discretionary control upon the completion, termination, or cancellation of the agreement. The City of Nashua shall not have any obligation to re-award or to provide, in any manner, the unexpended funds to Professional Engineer. Professional Engineer shall have no claim of any sort to the unexpended funds.

14. COMPENSATION Review by the City of Nashua of Professional Engineer’s submitted monthly invoice forms and progress reports for payment will be promptly accomplished by the City of Nashua. If there is insufficient information, the City of Nashua may require Professional Engineer to submit additional information. Unless the City of Nashua, in its sole discretion, decides otherwise, the City of Nashua shall pay Professional Engineer in full within 30 days of approval of the submitted monthly invoice forms and progress reports.

15. COMPLIANCE WITH APPLICABLE LAWS Professional Engineer, at all times, shall fully and completely comply with all applicable local, state and federal laws, statutes, regulations, ordinances, orders, or requirements of any sort in carrying out the obligations of this contract, including, but not limited to, all federal, state, and local accounting procedures and requirements, all immigration and naturalization laws, and the Americans With Disabilities Act. Professional Engineer shall, throughout the period services are to be performed under this contract, monitor for any changes to the applicable laws, statutes, regulations, ordinances, orders, or requirements, shall promptly notify the City of Nashua in writing of any changes to the same relating to or affecting this contract, and shall submit detailed documentation of any effect of the change in terms of both time and cost of performing the contract.
16. NONDISCRIMINATION If applicable or required under any federal or state law, statute, regulation, order, or other requirement, Professional Engineer agrees to the following terms. Professional Engineer will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. Professional Engineer agrees to take affirmative action to employ, advance in employment, or to otherwise treat qualified, handicapped individuals without discrimination based upon physical or mental handicap in all employment practices, including but not limited to the following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, rates of pay, or other forms of compensation and selection for training, including apprenticeship.

Without limitation of the foregoing, Professional Engineer's attention is directed to “Title 41” Public Contracts and Property Management” C.F.R. Subtitle B “Other Provisions Relating to Public Contracts” Section 60 “Office of Federal Contract Compliance Programs, Equal Employment, Department of Labor” which, by this reference, is incorporated in this contract.

Professional Engineer agrees to assist disadvantaged business enterprises in obtaining business opportunities by identifying and encouraging disadvantaged suppliers, consultants, and subconsultants to participate to the extent possible, consistent with their qualification, quality of work, and obligation of Professional Engineer under this contract.

In connection with the performance of work under this contract, Professional Engineer agrees not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, or sexual orientation. This agreement includes, but is not 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.

Professional Engineer agrees, if applicable, to insert these provisions in all subcontracts, except for subcontracts for standard commercial supplies or raw materials. Any violation of any applicable provision by Professional Engineer shall constitute a material breach of the contract.

17. ENDORSEMENT Professional Engineer shall seal and/or stamp and sign professional documents including drawings, plans, maps, reports, specifications, and other instruments of service prepared by Professional Engineer or under its direction as required under the laws of the State of New Hampshire.

18. ASSIGNMENT, TRANSFER, DELEGATION, OR SUBCONTRACTING Professional Engineer shall not assign, transfer, delegate, or subcontract any rights, obligations, or duties under this contract without the prior written consent of the City of Nashua. Any such assignment, transfer, delegation, or subcontracting without the prior written consent of the City of Nashua is void. Any consent of the City of Nashua to any assignment, transfer, delegation, or subcontracting shall only apply to the incidents expressed and provided for in the written consent and shall not be deemed to be a consent to any subsequent assignment, transfer, delegation, or subcontracting. Any such assignment, transfer, delegation, or subcontract shall require compliance with or shall incorporate all terms and conditions set forth in this agreement, including all incorporated Exhibits and written amendments or modifications. Subject to the foregoing provisions, the contract inures to the benefit of, and is binding upon, the successors and assigns of the parties.

19. CITY INSPECTION OF CONTRACT MATERIALS The books, records, documents and accounting procedures and practices of Professional Engineer related to this contract shall be subject to inspection, examination and audit by the City of Nashua, including, but not limited to, the contracting agency, the Board of Public Works, Corporation Counsel, and, if applicable, the Comptroller General of the United States, or any authorized representative of those entities.
20. **DISPOSITION OF CONTRACT MATERIALS** Any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials, including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Professional Engineer in the performance of its obligations under this contract shall be the exclusive property of the City of Nashua and all such materials shall be remitted and delivered, at Professional Engineer's expense, by Professional Engineer to the City of Nashua upon completion, termination, or cancellation of this contract. Alternatively, if the City of Nashua provides its written approval to Professional Engineer, any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Professional Engineer in the performance of its obligations under this contract must be retained by Professional Engineer for a minimum of four years after final payment is made and all other pending matters are closed. If, at any time during the retention period, the City of Nashua, in writing, requests any or all of the materials, then Professional Engineer shall promptly remit and deliver the materials, at Professional Engineer's expense, to the City of Nashua. Professional Engineer shall not use, willingly allow or cause to have such materials used for any purpose other than the performance of Professional Engineer's obligations under this contract without the prior written consent of the City of Nashua.

21. **PUBLIC RECORDS LAW, COPYRIGHTS, AND PATENTS** Professional Engineer expressly agrees that all documents ever submitted, filed, or deposited with the City of Nashua by Professional Engineer (including those remitted to the City of Nashua by Professional Engineer pursuant to paragraph 20), unless designated as confidential by a specific statute of the State of New Hampshire, shall be treated as public records and shall be available for inspection and copying by any person, or any governmental entity.

No books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Professional Engineer in the performance of its obligations under this contract shall be the subject of any application for a copyright or patent by or on behalf of Professional Engineer. The City of Nashua shall have the right to reproduce any such materials.

Professional Engineer expressly and indefinitely waives all of its rights to bring, including but not limited to, by way of complaint, interpleader, intervention, or any third party practice, any claims, demands, suits, actions, judgments, or executions, for damages or any other relief, in any administrative or judicial forum, against the City of Nashua or any of its officers or employees, in either their official or individual capacity of the City of Nashua, for violations of or infringement of the copyright or patent laws of the United States or of any other nation. Professional Engineer agrees to indemnify, to defend, and to hold harmless the City of Nashua, its representatives, and employees from any claim or action seeking to impose liability, costs, and attorney fees incurred as a result of or in connection with any claim, whether rightful or otherwise, that any material prepared by or supplied to Professional Engineer infringes any copyright or that any equipment, material, or process (or any part thereof) specified by Professional Engineer infringes any patent.

Professional Engineer shall have the right, in order to avoid such claims or actions, to substitute at its expense non-infringing materials, concepts, products, or processes, or to modify such infringing materials, concepts, products, or processes so they become non-infringing, or to obtain the necessary licenses to use the infringing materials, concepts, products, or processes, provided that such substituted or modified materials, concepts, products, or processes shall meet all the requirements and be subject to all the terms and conditions of this contract.
22. **FINAL ACCEPTANCE**  Upon completion of all work under the contract, Professional Engineer shall notify the City of Nashua in writing of the date of the completion of the work and request confirmation of the completion from the City of Nashua. Upon receipt of the notice, the City of Nashua shall confirm to Professional Engineer in writing that the whole of the work was completed on the date indicated in the notice or provide Professional Engineer with a written list of work not completed. With respect to work listed by the City of Nashua as incomplete, Professional Engineer shall promptly complete the work and the final acceptance procedure shall be repeated. The date of final acceptance of a project by the City of Nashua shall be the date upon which the Board of Public Works or other designated official accepts and approves the notice of completion.

23. **TAXES**  Professional Engineer shall pay all taxes, levies, duties, and assessments of every nature due in connection with any work performed under the contract and make any and all payroll deductions required by law. The contract sum and agreed variations to it shall include all taxes imposed by law. Professional Engineer hereby indemnifies and holds harmless the City of Nashua from any liability on account of any and all such taxes, levies, duties, assessments, and deductions.

24. **NON-WAIVER OF TERMS AND CONDITIONS**  None of the terms and conditions of this contract shall be considered waived by the City of Nashua. There shall be no waiver of any past or future default, breach, or modification of any of the terms and conditions of the contract unless expressly stipulated to by the City of Nashua in a written waiver.

25. **RIGHTS AND REMEDIES**  The duties and obligations imposed by the contract and the rights and remedies available under the contract shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

26. **PROHIBITED INTERESTS**  Professional Engineer shall not allow any officer or employee of the City of Nashua to have any indirect or direct interest in this contract or the proceeds of this contract. Professional Engineer warrants that no officer or employee of the City of Nashua has any direct or indirect interest, whether contractual, noncontractual, financial or otherwise, in this contract or in the business of Professional Engineer. If any such interest comes to the attention of Professional Engineer at any time, a full and complete disclosure of the interest shall be immediately made in writing to the City of Nashua. Professional Engineer also warrants that it presently has no interest and that it will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. Professional Engineer further warrants that no person having such an interest shall be employed in the performance of this contract. If City of Nashua determines that a conflict exists and was not disclosed to the City of Nashua, it may terminate the contract at will or for cause in accordance with paragraph 8.

In the event Professional Engineer (or any of its officers, partners, principals, or employees acting with its authority) is convicted of a crime involving a public official arising out or in connection with the procurement of work to be done or payments to be made under this contract, City of Nashua may terminate the contract at will or for cause in accordance with paragraph 8. Upon termination, Professional Engineer shall refund to the City of Nashua any profits realized under this contract, and Professional Engineer shall be liable to the City of Nashua for any costs incurred by the City of Nashua in completing the work described in this contract. At the discretion of the City of Nashua, these sanctions shall also be applicable to any such conviction obtained after the expiration or completion of the contract.

Professional Engineer warrants that no gratuities (including, but not limited to, entertainment or gifts) were offered or given by Professional Engineer to any officer or employee of the City of Nashua with a view toward securing a contract or securing favorable treatment with respect to the
awarding or amending or making of any determinations with respect to the performance of this contract. If City of Nashua determines that such gratuities were or offered or given, it may terminate the contract at will or for cause in accordance with paragraph 8.

The rights and remedies of this section shall in no way be considered for be construed as a waiver of any other rights or remedies available to the City of Nashua under this contract or at law.

27. THIRD PARTY INTERESTS AND LIABILITIES The City of Nashua and Professional Engineer, including any of their respective agents or employees, shall not be liable to third parties for any act or omission of the other party. This contract is not intended to create any rights, powers, or interest in any third party and this agreement is entered into for the exclusive benefit of the City of Nashua and Professional Engineer.

28. SURVIVAL OF RIGHTS AND OBLIGATIONS The rights and obligations of the parties that by their nature survive termination or completion of this contract shall remain in full force and effect.

29. SEVERABILITY In the event that any provision of this contract is rendered invalid or unenforceable by any valid act of Congress or of the New Hampshire legislature or any court of competent jurisdiction, or is found to be in violation of state statutes or regulations, the invalidity or unenforceability of any particular provision of this contract shall not affect any other provision, the contract shall be construed as if such invalid or unenforceable provisions were omitted, and the parties may renegotiate the invalid or unenforceable provisions for sole purpose of rectifying the invalidity or unenforceability.

30. MODIFICATION OF CONTRACT AND ENTIRE AGREEMENT This contract constitutes the entire contract between the City of Nashua and Professional Engineer. The parties shall not be bound by or be liable for any statement, representation, promise, inducement, or understanding of any kind or nature not set forth in this contract. No changes, amendments, or modifications of any terms or conditions of the contract shall be valid unless reduced to writing and signed by both parties.

31. CHOICE OF LAW AND VENUE This contract shall be governed exclusively by the laws of the State of New Hampshire and any claim or action brought relating to this contract, the work performed or contracted to be performed thereunder, or referable in anyway thereto shall be brought in Hillsborough County (New Hampshire) Superior Court Southern Judicial District or in the New Hampshire 9th Circuit Court—Nashua and not elsewhere.
EXHIBIT B: SCOPE OF WORK

I. Prepare Preliminary Design Report for Screening Upgrade at Wet Weather Flows Facility

A. Preliminary workshop. ENGINEER shall attend a preliminary workshop with OWNER to review the work plan for the upgrade project, and solicit input on key issues, ancillary improvements, and potential site visits to inspect existing installations. Brainstorm on options, and identify the preferred alternatives for detailed evaluation.

B. Develop base plans and collect site data. ENGINEER shall develop base plans for construction documents using existing record drawing information supplemented by detailed field measurements. This will primarily focus on the depth and dimensions of the wet weather diversion structure, influent channels, and influent wet well. Assume 1 site visit for field measurements by ENGINEER with 2-person team.

C. Prepare and Issue Technical Memorandum (TM)

1. Evaluate design requirements for screens, including modifications to existing influent channel and first floor level. Evaluate suitable manufacturers and secure initial budgetary quotes.
   a. Arrange and attend up to 1 days of field trips with OWNER staff to comparable installations. Budget for up to 1 OWNER staff and 1 ENGINEER staff for flight and overnight accommodations related to site visits. ENGINEER shall prepare TM summarizing findings of site visit(s).

2. Evaluate modifications to existing wash press installation to account for new screens and improve overall reliability.

3. Evaluate modifications to monorail system to account for new screens.

4. Evaluate options to improve access to influent channel level from first floor including ladders, safety davit crane for personnel removal, and supplemental ventilation.

5. Each of the ENGINEER's building design disciplines shall inspect existing facilities and prepare TM's summarizing the anticipated improvements as follows:
   a. Architectural issues will be limited to requirements for allowing the screens to be installed through roof either through temporary opening and repair to roofing or through new permanent hatch. Summarize findings in draft TM.
b. ENGINEER’s structural division shall evaluate the necessary concrete modifications to allow installation of new screen in existing influent channels. Summarize findings in draft TM.

c. ENGINEER’s instrumentation division shall summarize the existing control system and recommended modifications associated with new screen installation in draft TM.

d. ENGINEER’s electrical division will summarize the existing electrical gear and recommended modifications associated with new screen installation in draft TM.

e. ENGINEER does not expect there to be a need for Civil or Mechanical division specific TM’s. Minor upgrades associated with these divisions shall be included in other TM’s within the PDR.

6. ENGINEER will hold two progress meetings to discuss draft TM and site visits. Input from meetings shall be incorporated into updated TM’s.

7. ENGINEER shall finalize TM’s based upon input from the City and include in the Preliminary Design Report.

D. Prepare draft Preliminary Design Report (PDR) and drawings.

1. Prepare draft Preliminary Design Report (PDR) that includes all technical memorandums, final design criteria, preliminary drawings and outline specifications.

2. Advise OWNER if additional reports, data or other information or services are necessary and assist OWNER in obtaining such reports, data or other information and services.

E. Prepare preliminary construction cost estimate

1. Based on the information contained in the Preliminary Design documents, submit to OWNER a Construction Cost Estimate.

F. Finalize Preliminary Design Report (PDR)

1. Submit a draft of the Preliminary Design document to, and meet to review with OWNER.

2. Receive OWNER comments and provide written response to all comments to satisfaction of OWNER. Submit final Preliminary Design documents to DIVISION for review.

3. The draft preliminary design report shall be submitted within 45 days of receiving authorization to proceed. Assume OWNER completes review and issues authorization to proceed with final design within 14 days of receiving draft preliminary design report.
II. Final Design for Wet Weather Facility Screening Upgrade.

A. Permitting, Codes, Regulatory Buy-in. Discuss and obtain permissions from DIVISION for any sole-sourcing of equipment on the project.

B. 90% Completion Plans, Contract Documents and Cost Estimates. Based on an agreed upon preliminary design documents for the screen upgrade and appurtenances, ENGINEER shall proceed with the 90% design plans, specifications, and bidding documents as well as to prepare an updated estimate of construction cost. Submit two (2) full-size copies of these plans, specifications and bidding documents to OWNER for review and comment, plus one (1) 11x17 and an electronic PDF copy of all documents. Advise OWNER of any adjustments to the Construction Cost Estimate as a result of changes in scope of the Project. Hold a review meeting to discuss issues requiring OWNER input.

1. Submit 90% plans, contract documents and cost estimate with 60 days of receiving authorization to proceed with final design.
2. Assume OWNER completes review and provides comments within 14 days of receiving 90% submittal.

C. 95% Completion Plans, Contract Documents and Cost Estimates. Following the review meeting, ENGINEER shall proceed with the 95% design plans, specifications, and bidding documents. Submit two (2) full-size copies of these plans, specifications and bidding documents to OWNER (plus reduced size (11x17) plans and an electronic PDF copy of all documents) and one (1) full-size copy to the DIVISION for their review. Advise OWNER of any adjustments to the Construction Cost Estimate as a result of changes in scope of the Project.

1. All written comments from DIVISION shall be incorporated into the documents with a written response on how it was addressed.
2. Meet with OWNER to discuss OWNER and DIVISION comments on 95% documents and provide written response to all comments received to the satisfaction of the OWNER.
3. Prepare 95% plans, contract documents and cost estimate within 15 days of receiving comments from OWNER on 90% submittal.
D. Final Plans, Contract Documents and Cost Estimates

Upon the OWNER’s and DIVISION’s acceptance of the 95% plans and contract documents as adequately completed, and receipt of any comments to be addressed, the ENGINEER shall prepare the final, bid-ready design plans, specifications and estimates for construction costs, revised to address the comments from the draft reviews. The submittal shall be ready to be advertised for construction bidding and shall include a schedule for the bidding and construction process.

1. The final, bid-ready plans and contract documents shall be completed within 15 days of receiving all comments from OWNER and DIVISION.

2. Assuming OWNER and DIVISION complete the review of the 95% documents within 14 days, and comply with all previous review periods, the overall time frame from authorization to proceed with preliminary design to submittal of the final, bid-ready documents shall be 180 days.

III. Bidding Phase Services

Assistance in securing construction bids, preparing bid tabulation and analysis of bids, and recommendation regarding award of contract. A copy of the bid analysis will be furnished to the DIVISION.

1. Make such revisions to the construction Contract Documents as may be necessary to comply with Federal, State or OWNER requirements.

2. Assume OWNER to be responsible for advertising for bids for the construction contract in appropriate newspapers and with the usual construction industry bidding information services.

3. Print and provide bidding documents to the OWNER. Assume three (3) full-size copies of the Contract Documents and the plans shall be provided, plus one reduced size (11x17) set. An electronic PDF version of all documents shall also be submitted to OWNER.

4. Provide electronic plan room for distribution of bidding documents in electronic PDF format to interested contractors and suppliers.

5. Respond to bidders’ questions.


8. Review all bids and prepare bid tabulation.

9. Review the qualifications of the apparent low bidder(s) and compliance with other contract requirements. Report on the results of the reviews and issue a Recommendation for Award.

10. The length of the Bidding Phase is assumed to be 28 days.
March 14, 2019
Memo #19-128

TO:          MAYOR DONCHESS
            FINANCE COMMITTEE

SUBJECT:    CASELLA RECYCLING LLC CONTRACT CHANGE ORDER #1 (VALUE: $120,000)
            DEPARTMENT: 168 SOLID WASTE; FUND: SOLID WASTE

Please see the attached communication from Jeff Lafleur, Solid Waste Department Superintendent dated March 8, 2019 for the information related to this contract.

Pursuant to § 5-78 Major purchases (greater than $10,000) A. All supplies and contractual services, except as otherwise provided herein, when the estimated cost thereof shall exceed $10,000 shall be purchased by formal, written contract from the lowest responsible bidder, after due notice inviting bids.

This funding is contingent upon the approval of a supplemental appropriation for these funds.

The Solid Waste Department Superintendent, Board of Public Works (March 7, 2019 meeting) and the Purchasing Department recommend the approval of this change order in an amount of $120,000 to Casella Recycling LLC of Charlestown, MA.

Respectfully,

Dan Kooker
Purchasing Manager

Cc: J Lafleur    L Fauteux
City of Nashua, Public Works Division

To: Board of Public Works                Meeting Date: March 8, 2019

From: Jeff Lafleur, Superintendent
      Solid Waste Department

Re: Change Order #1 to contract with Casella Recycling LLC.

A. Motion: To approve Change Order #1 to the contract with Casella Recycling LLC of Charlestown, MA in the amount of $120,000 contingent upon approval of supplemental appropriation. Funding will be through Department: 168 Solid Waste; Fund: Solid Waste; Account Classification: 55 Other Contracted Services.

Discussion: Due to continued weakness in recycling markets the City of Nashua’s costs for its recycling program will exhaust the $400,000 originally approved for FY19 before the current fiscal year ends.

The Solid Waste Department is requesting Change Order #1 in the amount of $120,000 be made to the contract with Casella Recycling LLC to fund the program through the end of the current fiscal year. This funding would be contingent upon the approval of a supplemental appropriation for these funds.
CHANGE ORDER

No. 1

PROJECT: SINGLE STREAM RECYCLABLE MATERIAL PROCESSING

OWNER'S CONTRACT NO: RFP1058-022318

EXECUTED CONTRACT DATE: September 10, 2018

DATE OF ISSUANCE: March 7, 2019 EFFECTIVE DATE: Upon City Approval

OWNER: City of Nashua, NH

OWNER's Purchase Order NO.: 144109

CONTRACTOR: CASELLA RECYCLING, LLC

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

Description: To increase the Contract, executed on September 10, 2018, value to fund the program through the end of the current fiscal year, this ends on June 30, 2019.
# Summary

<table>
<thead>
<tr>
<th><strong>CHANGE IN CONTRACT PRICE:</strong></th>
<th><strong>CHANGE IN CONTRACT TIMES:</strong></th>
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<tbody>
<tr>
<td>Original Contract Price</td>
<td>Original Contract Times</td>
</tr>
<tr>
<td>$400,000</td>
<td>The contract will commence on or about <strong>July 1, 2018</strong> and terminate on or about <strong>June 30, 2019</strong>.</td>
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<th>Net changes from previous Change Orders</th>
<th>Net change from previous Change Orders</th>
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<td>$0.00</td>
<td>The contract will commence on or about <strong>July 1, 2018</strong> and terminate on or about <strong>June 30, 2019</strong>.</td>
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</table>

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<tr>
<th>Contract Price prior to this Change Order</th>
<th>Contract Times prior to this Change Order</th>
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</thead>
<tbody>
<tr>
<td>$400,000</td>
<td>The contract will commence on or about <strong>July 1, 2018</strong> and terminate on or about <strong>June 30, 2019</strong>.</td>
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<tr>
<th>Net Increase (decrease) of this Change Order</th>
<th>Net Increase (decrease) of this Change Order</th>
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<tr>
<td>$120,000</td>
<td>The contract will commence on or about <strong>July 1, 2018</strong> and terminate on or about <strong>June 30, 2019</strong>.</td>
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</table>

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<tr>
<th>Contract Price with all approved Change Orders</th>
<th>Contract Times with all approved Change Orders</th>
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<tbody>
<tr>
<td>$520,000</td>
<td>The contract will commence on or about <strong>July 1, 2018</strong> and terminate on or about <strong>June 30, 2019</strong>.</td>
</tr>
</tbody>
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**RECOMMENDED:**
By: [Signature]
(DRW Representative (Authorized Signature))
Date: 3-7-19

**ACCEPTED:**
By: __________________________
Name
Independent Contractor (Authorized Signature)
Date: __________________________

**APPROVED:**
By: __________________________
Mayor Jim Donchess
Owner (Authorized Signature)
Date: __________________________
RESOLUTION

RELATIVE TO THE SUPPLEMENTAL APPROPRIATION OF $120,000 OF UNANTICIPATED REVENUE FROM FUND 6000 “SOLID WASTE FUND”, ACCOUNT 44286 “COVER MATERIAL REVENUE” INTO FUND 6000 “SOLID WASTE FUND”, ACCOUNT 55699 “OTHER CONTRACTED SERVICES”

In the Year Two Thousand and Nineteen

RESOLVED by the Board of Aldermen of the City of Nashua to appropriate $120,000 of Solid Waste unanticipated revenue from Fund 6000 “Solid Waste Fund”, Account 44286 “Cover Material Revenue” into Fund 6000 “Solid Waste Fund”, Account 55699 “Other Contracted Services” for the purpose of providing additional funds for the single stream recycling contract.

As this is a resolution which supplements the budget, the following information is provided pursuant to NRO § 5-145, E:

Currently, the accumulated sum of all appropriations of the FY2019 combined annual municipal budget is $270,483,718. The FY2019 dollar amount under the limit established by City Charter Section 56-c is $976,842.

Resolution R-19-107, relative to a supplemental appropriation to a School Department Trust Fund, is currently pending legislation. If R-19-107 is approved, the accumulated sum of all appropriations of the FY2019 combined annual municipal budget will be $270,533,968. The FY2019 dollar amount under the limit established by City Charter Section 56-c will be $926,592.

If R-19-107 and this resolution passes, the accumulated sum of all appropriations of the FY2019 combined annual municipal budget will be $270,653,968. The FY2019 dollar amount under the limit established by City Charter Section 56-c will be $806,592.
LEGISLATIVE YEAR 2019

RESOLUTION: R-19-115

PURPOSE: Relative to the supplemental appropriation of $120,000 of unanticipated revenue from Fund 6000 “Solid Waste Fund”, Account 44286 “Cover Material Revenue” into Fund 6000 “Solid Waste Fund”, Account 55699 “Other Contracted Services”

SPONSOR(S): Mayor Jim Donchess
Alderman Ernest Jette

COMMITTEE ASSIGNMENT:

FISCAL NOTE: This resolution will reduce year end surplus in the Solid Waste Fund.

______________________________

ANALYSIS

This resolution appropriates $120,000 of unanticipated revenue in the Solid Waste Fund for the purpose of providing additional funding for single stream recycling costs. The City currently has a contract with Casella Recycling at a not-to-exceed amount of $400,000. The rates for single stream recycling are increasing and it is anticipated that the $400,000 of funds appropriated will be depleted by the end of March. On February 15, 2019, at the Board of Public Works Recycling Committee meeting, there was a vote to request this supplemental appropriation. An increase to the current contract will be submitted to the Finance Committee for approval.

Charter Sec. 53 permits specific non-budget, supplementary appropriations. No public hearing is required under Charter Sec. 56-a. A two-thirds vote is required under Charter Sec. 56-b for an item or amount not in the mayor’s budget. A roll call is required under Charter Sec. 49. The supplementary appropriation is part of the combined annual budget for spending cap purposes.

Approved as to account structure, numbers, and amount: Financial Services Division

By: [Signature]

Approved as to form: Office of Corporation Counsel

By: [Signature]

Date: 5 March 2019
March 14, 2019  
Memo #19-133

TO:  
MAYOR DONCHESS 
FINANCE COMMITTEE

SUBJECT:  
PHASE III LANDFILL CONSTRUCTION QUALITY ASSURANCE SERVICES (VALUE: $255,000) 
DEPARTMENT: 168 SOLID WASTE; FUND: BOND

Please see the attached communication from Jeff Lafleur, Solid Waste Department Superintendent dated February 28, 2019 for the information related to this contract.

§ 5-83. Professional services. In the purchase of accounting, architectural, auditing, engineering, legal, medical and ambulance services and purchases of independent professional consultant services for personnel, data processing, actuarial, planning, management and other comparable purchases competitive bidding shall not be required. Competitive bidding is required in the procurement of insurance agents and consultants.

This funding is contingent upon the approval of bonds for these funds.

The Solid Waste Department Superintendent, Board of Public Works (February 28, 2019 meeting) and the Purchasing Department recommend the approval of this contract in an amount of $255,000 to Sanborn, Head & Associates, Inc of Concord, NH.

Respectfully,

[Signature]
Darl Kooker 
Purchasing Manager

Cc:  J Lafleur  L Fauteux
City of Nashua, Public Works Division

To: Board of Public Works

Meeting Date: February 28, 2019

From: Jeff Lafleur, Superintendent
Solid Waste Department

Re: Phase III Landfill Construction Quality Assurance Services

B. Motion: To approve a contract with Sanborn, Head & Associates, Inc. of Concord, NH in the amount of $255,000 to provide the Solid Waste Department with Construction Quality Assurance (CQA) services for the Phase III Landfill construction. Funding will be through Department: 168 Solid Waste; Fund: Bond; Activity: Phase III Landfill.

Discussion: On February 18, 2019 Sanborn, Head & Associates, Inc. (Sanborn Head) submitted a proposal to provide the Solid Waste Department with Construction Quality Assurance (CQA) services for the construction of the Phase III landfill. The cost of this service will be covered under the Phase III Landfill construction bond.

The CQA services Sanborn, Head & Associates will provide will include but not be limited to: on-site monitoring and oversite to ensure contractor work conforms with project plans and specifications, reviewing contractor submittals and payment requisitions, materials testing, and preparing progress and final CQA reports documenting construction activities. The final report will be submitted to NHDES as required by the Solid Waste Rules.

Sanborn Head designed the Phase III Landfill and has provided valuable engineering service and expertise to the Solid Waste Department which makes them the best company to provide these services.

Superintendent Jeff Lafleur recommends awarding the Phase III Landfill CQA contract to Sanborn, Head & Associates.
RESOLUTION

AUTHORIZING THE MAYOR AND CITY TREASURER TO ISSUE BONDS NOT TO EXCEED THE AMOUNT OF SIX MILLION DOLLARS ($6,000,000) FOR THE PHASE III LINED LANDFILL EXPANSION OF THE NASHUA FOUR HILLS LANDFILL, TO INCLUDE ENGINEERING SERVICES

CITY OF NASHUA

In the Year Two Thousand and Nineteen

RESOLVED by the Board of Aldermen of the City of Nashua that the Mayor of the City of Nashua and the City Treasurer of the City of Nashua are hereby authorized to issue and sell general obligation bonds of the City, in an aggregate principal not to exceed six million dollars ($6,000,000). The proceeds of said bonds shall be used for the Phase III lined landfill expansion, including engineering services. Life span of said expansion is ten (10) years.

Pursuant to Nashua City Charter §54-a, this resolution requires a “duly advertised public hearing”. Also see N.H. RSA 33:9, which requires a 2/3 vote for passage of this resolution.

The bonds shall be general obligations of the City of Nashua, payable as to principal and interest from ad valorem taxes, which will be levied without limitation as to rate or amount on all taxable property within the territorial limits of the City of Nashua.

The bonds shall bear the manual or facsimile signature of the City Treasurer and the Mayor. In accordance with Chapter 91 of the New Hampshire Acts of 2005, bonds issued pursuant to this resolution shall not require an authenticating certificate of a bank or trust company doing business in the State of New Hampshire or The Commonwealth of Massachusetts, or the Commissioner of Revenue Administration.

The bonds are to be issued in fully-registered form by means of a book-entry system or otherwise and shall have such terms and conditions and be in such form, subject to the provisions of this resolution and applicable law, as shall be determined by the Mayor and the City Treasurer.

RESOLVED FURTHER, that the Mayor is authorized to enter into the required contracts therefor as well as any amendments to be made thereto or any other documentation necessary for the receipt of said funds.
LEGISLATIVE YEAR 2019

RESOLUTION: R-19-114

PURPOSE: Authorizing the Mayor and City Treasurer to issue bonds not to exceed the amount of six million dollars ($6,000,000) for the Phase III lined landfill expansion of the Nashua Four Hills Landfill, to include engineering services

SPONSOR(S): Mayor Jim Donchess

COMMITTEE ASSIGNMENT:

FISCAL NOTE: It is anticipated that the bonds will be sold beginning in FY 20 and continuing through FY 21. It is projected that the interest rate for the bonds will be approximately 3.5% and the total cost of the bond over 10 years will be approximately $7,155,000, including interest. The average annual payment will vary as the bonds will be sold over a two year period and the payment plan may include a deferred principal payback plan.

ANALYSIS

This resolution authorizes the City to issue and sell general obligation bonds up to $6,000,000 for Phase III lined landfill expansion at the Four Hills Landfill, including engineering services. This project is in the FY2019 Capital Improvements Program. This legislation should be referred to the Board of Public Works for review and approval.

Pursuant to Nashua City Charter §54-a, this resolution requires a “duly advertised public hearing”. Also see NH RSA 33:9, which requires a 2/3 vote for passage of this resolution.

Approved as to content, account structure, numbers and amount: Financial Services Division

By: [Signature]

Office of Corporation Counsel

By: [Signature]

Date: March 14, 2019
CONTRACT FOR PROFESSIONAL SERVICES

PHASE III LANDFILL CONSTRUCTION QUALITY ASSURANCE SERVICES

A CONTRACT BETWEEN

THE CITY OF NASHUA, 229 MAIN STREET, CITY HALL, NASHUA, NH 03060

AND

SANBORN, HEAD & ASSOCIATES, INC.
and its successors, transferees and assignees (together “Professional Engineer”)

NAME AND TITLE OF PROFESSIONAL ENGINEER

20 FOUNDRY STREET, CONCORD, NH 03301

ADDRESS OF PROFESSIONAL ENGINEER

WHEREAS, the City of Nashua, a political subdivision of the State of New Hampshire, from time to time requires the services of a Professional Engineer; and

WHEREAS, it is deemed that the services of a Professional Engineer herein specified are both necessary and desirable and in the best interests of the City of Nashua; and

WHEREAS, Professional Engineer represents they are duly qualified, equipped, staffed, ready, willing and able to perform and render the services hereinafter described;

NOW, THEREFORE, in consideration of the agreements herein made, the parties mutually agree as follows:

1. DOCUMENTS INCORPORATED. The following exhibits are by this reference incorporated herein and are made part of this contract:

   Exhibit A -- General Conditions for Contracts
   Exhibit B -- Sanborn Head Scope of Services and Fee Schedule, dated February 18, 2019

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, proposals, representations or agreements, either written or oral. Any other documents which are not listed in this Article are not part of the Contract.

In the event of a conflict between the terms of the Proposal and the terms of this Agreement, a written change order and/or fully executed City of Nashua Purchase Order, the terms of this Agreement, the written change order or the fully executed City of Nashua Purchase Order shall control over the terms of the Proposal.

2. WORK TO BE PERFORMED. Except as otherwise provided in this contract, Professional Engineer shall furnish all services, equipment, and materials and shall perform all operations necessary and required to carry out and perform in accordance with the terms and conditions of the contract the work described.
3. PERIOD OF PERFORMANCE. Professional Engineer shall perform and complete all work by December 31, 2019, which date shall only be altered by mutually approved written agreement to extend the period of performance or by termination in accordance with the terms of the contract. Professional Engineer shall begin performance upon receipt of an Executed Contract and a valid Purchase Order issued from the City of Nashua.

4. COMPENSATION. Professional Engineer agrees to perform the work for a total cost not to exceed

TWO HUNDRED FIFTY-FIVE THOUSAND ($ 255,000.00)

The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work.

Unless Professional Engineer has received a written exemption from the City of Nashua, Professional Engineer shall submit monthly requests for payment for services performed under this agreement in accordance with the values stated in the Agreement. Such requests shall be supported by such data substantiating the Professional Engineer’s right to payment as the City of Nashua may reasonably require. Professional Engineer shall submit monthly requests for payment for services performed under this agreement shall be submitted as follows:

- Electronically via email to VendorAPInvoices@NashuaNH.gov

**OR**

- Paper Copies via US Mail to:

  City of Nashua, City Hall  
  Accounts Payable  
  229 Main Street  
  Nashua, NH 03060

*Please do not submit invoices both electronically and paper copy.*

In addition, and to facilitate the proper and timely payment of applications, the City of Nashua requires that all submitted invoices contain a valid PURCHASE ORDER NUMBER.

Requests for payment shall be submitted no later than fifteen (15) days after the end of each month and must include a detailed summary of the expenditures reported in a form that supports the approved budget. Specifically, Professional Engineer agrees to provide the following with each request for payment:

1. Appropriate invoice forms. The forms shall include the project purchase order number, a listing of personnel hours and billing rates, and other expenditures for which payment is sought.

2. A progress report. The report shall include, for each monthly reporting period, a description of the work accomplished, problems experienced, upcoming work, any extra work carried out, and a schedule showing actual expenditures billed for the period, cumulative total expenditures billed and paid to date under the contract, and a comparison of cumulative total expenditures billed and paid to the approved budget.

The City of Nashua will pay for work satisfactorily completed by Professional Engineer. The City of Nashua will pay Professional Engineer within 30 days of approval by the City of Nashua of the submitted invoice forms and progress reports. The City of Nashua will make no payments until the invoice forms and progress reports have been submitted and approved.
5. **EFFECTIVE DATE OF CONTRACT.** This contract shall not become effective until and unless approved by the City of Nashua.

6. **NOTICES.** All notices, requests, or approvals required or permitted to be given under this contract shall be in writing, shall be sent by hand delivery, overnight carrier, or by United States mail, postage prepaid, and registered or certified, and shall be addressed to:

**CITY OF NASHUA REPRESENTATIVE:**
- Jeff Lafluer, Superintendent
- City of Nashua, Solid Waste Department
- 840 West Holli Street
- Nashua, NH 03062

**REPRESENTATIVE:**
- Eric S. Steinhauser, P.E., CPESC, CPSWQ
- Sanborn, Head & Associates
- 20 Foundry Street
- Concord, NH 03301

Any notice required or permitted under this contract, if sent by United States mail, shall be deemed to be given to and received by the addressee thereof on the third business day after being deposited in the mail. The City of Nashua or Professional Engineer may change the address or representative by giving written notice to the other party.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be signed and intend to be legally bound thereby.

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**City of Nashua, NH (signature)**  
**Sanborn Head and Associates (signature)**

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**James Donchess, Mayor**  
(Printed Name and Title)

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**Date**  
**Date**

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General Terms and Conditions

1. **Definitions** Unless otherwise required by the context, "Professional Engineer", and its successors, transferees and assignees (together “Professional Engineer”) includes any of the Professional Engineer's consultants, sub consultants, contractors, and subcontractors

2. **Professional Engineer Status** The parties agree that Professional Engineer shall have the status of and shall perform all work under this contract as a Professional Engineer, maintaining control over all its consultants, sub consultants, contractors, or subcontractors. The only contractual relationship created by this contract is between the City of Nashua and Professional Engineer, and nothing in this contract shall create any contractual relationship between the City of Nashua and Professional Engineer's consultants, sub consultants, contractors, or subcontractors. The parties also agree that Professional Engineer is not a City of Nashua employee and that there shall be no:

   (1) Withholding of income taxes by the City of Nashua:
   (2) Industrial insurance coverage provided by the City of Nashua;
   (3) Participation in group insurance plans which may be available to employees of the City of Nashua;
   (4) Participation or contributions by either the Professional Engineer or the City of Nashua to the public employee’s retirement system;
   (5) Accumulation of vacation leave or sick leave provided by the City of Nashua;
   (6) Unemployment compensation coverage provided by the City of Nashua.

3. **Standard Of Care** Professional Engineer shall be responsible for the professional quality, technical accuracy, timely completion, and coordination of all work performed under this contract. The standard of care of the Professional Engineer’s is the degree of professional skill, care, diligence, and sound practices and judgment that are normally exercised by recognized professional firms with respect to services of a similar nature. It shall be the duty of Professional Engineer to assure at its own expense that all work is technically sound and in conformance with all applicable federal, state, and local laws, statutes, regulations, ordinances, orders, or other requirements. In addition to all other rights which the City of Nashua may have, Professional Engineer shall, at its own expense and without additional compensation, re-perform work to correct or revise any deficiencies, omissions, or errors in the work or the product of the work or which result from Professional Engineer's failure to perform in accordance with this standard of care. Any approval by the City of Nashua of any products or services furnished or used by Professional Engineer shall not in any way relieve Professional Engineer of the responsibility for professional and technical accuracy and adequacy of its work. City of Nashua review, approval, or acceptance of, or payment for any of Professional Engineer's work under this contract shall not operate as a waiver of any of the City of Nashua's rights or causes of action under this contract, and Professional Engineer shall be and remain liable in accordance with the terms of the contract and applicable law.

Professional Engineer shall furnish competent and skilled personnel to perform the work under this contract. The City of Nashua reserves the right to approve key personnel assigned by Professional Engineer to perform work under this contract. Approved key personnel shall not be taken off of the project by Professional Engineer without the prior written approval of the City of Nashua, except in the event of termination of employment. Professional Engineer shall, if requested to do so by the City of Nashua, remove from the job any personnel whom the City of Nashua determines to be incompetent, dishonest, or uncooperative.

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4. **City of Nashua Representative** The City of Nashua may designate a City of Nashua representative for this contract. If designated, all notices, project materials, requests by Professional Engineer, and any other communication about the contract shall be addressed or be delivered to the City of Nashua Representative.

5. **Changes to Scope of Work** The City of Nashua may, at any time, by written order, make changes to the general scope, character, or cost of this contract and in the services or work to be performed, either increasing or decreasing the scope, character, or cost of Professional Engineer's performance under the contract. Professional Engineer shall provide to the City of Nashua within 10 calendar days, a written proposal for accomplishing the change. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Professional Engineer should proceed with any or all of the proposed change. If the change causes an increase or a decrease in Professional Engineer's cost or time required for performance of the contract as a whole, an equitable adjustment shall be made and the contract accordingly modified in writing. Any claim of Professional Engineer for adjustment under this clause shall be asserted in writing within 30 days of the date the City of Nashua notified Professional Engineer of the change.

When Professional Engineer seeks changes, Professional Engineer shall, before any work commences, estimate their effect on the cost of the contract and on its schedule and notify the City of Nashua in writing of the estimate. The proposal for a change shall provide enough detail, including personnel hours for each sub-task and cost breakdowns of tasks, for the City of Nashua to be able to adequately analyze the proposal. The City of Nashua will then determine in writing if Professional Engineer should proceed with any or all of the proposed change.

Except as provided in this paragraph, Professional Engineer shall implement no change unless the City of Nashua in writing approves the change. Unless otherwise agreed to in writing, the provisions of this contract shall apply to all changes. The City of Nashua may provide verbal approval of a change when the City of Nashua, in its sole discretion, determines that time is critical or public health and safety are of concern. Any verbal approval shall be confirmed in writing as soon as practicable. Any change undertaken without prior City of Nashua approval shall not be compensated and is, at the City of Nashua's election, sufficient reason for contract termination.

6. **City of Nashua Cooperation** The City of Nashua agrees that its personnel will cooperate with Professional Engineer in the performance of its work under this contract and that such personnel will be available to Professional Engineer for consultation at reasonable times and after being given sufficient advance notice that will prevent conflict with their other responsibilities. The City of Nashua also agrees to provide Professional Engineer with access to City of Nashua records in a reasonable time and manner and to schedule items that require action by the Board of Public Works and Finance Committee in a timely manner. The City of Nashua and Professional Engineer also agree to attend all meetings called by the City of Nashua or Professional Engineer to discuss the work under the Contract, and that Professional Engineer may elect to conduct and record such meetings and shall later distribute prepared minutes of the meeting to the City of Nashua.

7. **Discovery of Conflicts, Errors, Omissions, Ambiguities, or Discrepancies** Professional Engineer represents that it has examined all contract documents, has brought all conflicts, errors, discrepancies, and ambiguities to the attention of the City of Nashua in writing, and has concluded that the City of Nashua's resolution of each matter is satisfactory to Professional Engineer. All future questions Professional Engineer may have concerning interpretation or clarification of this contract shall be submitted in writing to the City of Nashua within 10 calendar days of their arising. The writing shall state clearly and in full detail the basis for Professional Engineer's question or position. The City of Nashua representative shall render a
decision within 15 calendar days. The City of Nashua's decision on the matter is final. Any work affected by a conflict, error, omission, or discrepancy which has been performed by Professional Engineer prior to having received the City of Nashua's resolution shall be at Professional Engineer's risk and expense. At all times, Professional Engineer shall carry on the work under this contract and maintain and complete work in accordance with the requirements of the contract or determination of the City of Nashua. Professional Engineer is responsible for requesting clarification or interpretation and is solely liable for any cost or expense arising from its failure to do so.

8. **TERMINATION OF CONTRACT**

**A. Termination, Abandonment, or Suspension At Will.** The City of Nashua, in its sole discretion, shall have the right to terminate, abandon, or suspend all or part of the project and contract at will. If the City of Nashua chooses to terminate, abandon, or suspend all or part of the project, it shall provide Professional Engineer 10 day’s written notice of its intent to do so.

If all or part of the project is suspended for more than 90 days, the suspension shall be treated as a termination at will of all or part of the project and contract.

Upon receipt of notice of termination, abandonment, or suspension at will, Professional Engineer shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Place no further orders or subcontracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.
3. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the City of Nashua of all orders or subcontracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the City of Nashua any orders or subcontracts specified in the notice, and revoke agreements specified in the notice.
4. Not resume work after the effective date of a notice of suspension until receipt of a written notice from the City of Nashua to resume performance.

In the event of a termination, abandonment, or suspension at will, Professional Engineer shall receive all amounts due and not previously paid to Professional Engineer for work satisfactorily completed in accordance with the contract prior to the date of the notice and compensation for work thereafter completed as specified in the notice. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work.

**B. Termination for Cause** This agreement may be terminated by the City of Nashua on 10 calendar day’s written notice to Professional Engineer in the event of a failure by Professional Engineer to adhere to any or all the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the City of Nashua, to complete or make sufficient progress on the work in a timely and professional manner. Professional Engineer shall be given an opportunity for consultation with the City of Nashua prior to the effective date of the termination. Professional Engineer may terminate the contract on 10 calendar days written notice if, through no fault of Professional Engineer, the City of Nashua fails to pay Professional Engineer for 45 days after the date of approval by the City of Nashua of any Application for Payment.

Upon receipt of notice of termination for cause, Professional Engineer shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.
2. Provide the City of Nashua with a list of all unperformed services.
3. Place no further orders or sub-contracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.

4. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the City of Nashua of all orders or sub contracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the City of Nashua any orders or sub contracts specified in the notice, and revoke agreements specified in the notice.

5. Not resume work after the effective date of a notice of termination unless and until receipt of a written notice from the City of Nashua to resume performance.

In the event of a termination for cause, Professional Engineer shall receive all amounts due and not previously paid to Professional Engineer for work satisfactorily completed in accordance with the contract prior to the date of the notice, less all previous payments. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work. Any such payment may be adjusted to the extent of any additional costs occasioned to the City of Nashua by reasons of Professional Engineer’s failure. Professional Engineer shall not be relieved of liability to the City of Nashua for damages sustained from the failure, and the City of Nashua may withhold any payment to the Professional Engineer until such time as the exact amount of damages due to the City of Nashua is determined. All claims for payment by the Professional Engineer must be submitted to the City of Nashua within 30 days of the effective date of the notice of termination.

If after termination for the failure of Professional Engineer to adhere to any of the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the City of Nashua, to complete or make sufficient progress on the work in a timely and professional manner, it is determined that Professional Engineer had not so failed, the termination shall be deemed to have been a termination at will. In that event, the City of Nashua shall, if necessary, make an adjustment in the compensation paid to Professional Engineer such that Professional Engineer receives total compensation in the same amount as it would have received in the event of a termination-at-will.

C. GENERAL PROVISIONS FOR TERMINATION Upon termination of the contract, the City of Nashua may take over the work and prosecute it to completion by agreement with another party or otherwise. In the event Professional Engineer shall cease conducting business, the City of Nashua shall have the right to solicit applications for employment from any employee of the Professional Engineer assigned to the performance of the contract. Neither party shall be considered in default of the performance of its obligations hereunder to the extent that performance of such obligations is prevented or delayed by any cause, existing or future, which is beyond the reasonable control of such party. Delays arising from the actions or inactions of one or more of Professional Engineer’s principals, officers, employees, agents, subcontractors, consultants, vendors, or suppliers are expressly recognized to be within Professional Engineer’s control.

9. DISPUTE RESOLUTION The parties shall attempt to resolve any dispute related to this contract as follows. Either party shall provide to the other party, in writing and with full documentation to verify and substantiate its decision, its stated position concerning the dispute. No dispute shall be considered submitted and no dispute shall be valid under this provision unless and until the submitting party has delivered the written statement of its position and full documentation to the other party. The parties shall then attempt to resolve the dispute through good faith efforts and negotiation between the City of Nashua Representative and a Professional Engineer Representative. At all times, Professional Engineer shall carry on the work under this contract and maintain and complete work in accordance with the requirements of the contract or determination or direction of the City of Nashua. If the parties are unable to resolve their dispute
as described above within 30 days, the parties may request that the dispute be submitted to the Board of Public Works for resolution. If the parties are dissatisfied with the decision of the Board of Public Works, the parties’ reserve the right to pursue any available legal and/or equitable remedies for any breaches of this contract except as that right may be limited by the terms of this contract.

10. **NO DAMAGES FOR DELAY** Apart from a written extension of time, no payment, compensation, or adjustment of any kind shall be made to Professional Engineer for damages because of hindrances or delays in the progress of the work from any cause, and Professional Engineer agrees to accept in full satisfaction of such hindrances and delays any extension of time that the City of Nashua may provide.

11. **INSURANCE** Professional Engineer shall carry and maintain in effect during the performance of services under this contract:

- General Liability insurance in the amount of $1,000,000 per occurrence; $2,000,000 aggregate;
- $1,000,000 Combined Single Limit Automobile Liability;
- *Coverage must include all owned, non-owned and hired vehicles.*
- $1,000,000 Professional Liability;
- and Workers’ Compensation Coverage in compliance with the State of New Hampshire statutes, $100,000/$500,000/$100,000.

Professional Engineer shall maintain in effect at all times during the performance under this contract all specified insurance coverage with insurers. None of the requirements as to types and limits to be maintained by Professional Engineer are intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by Professional Engineer under this contract. The City of Nashua shall not maintain any insurance on behalf of Professional Engineer. Subcontractors are subject to the same insurance requirements as Professional Engineer and it shall be the Professional Engineer’s responsibility to ensure compliance of this requirement.

Professional Engineer will provide the City of Nashua with certificates of insurance for coverage as listed below and endorsements affecting coverage required by the contract within ten calendar days after the City of Nashua issues the notice of award. The City of Nashua requires thirty days written notice of cancellation or material change in coverage. The certificates and endorsements for each insurance policy must be signed by a person authorized by the insurer and who is licensed by the State of New Hampshire. **General Liability and Auto Liability policies must name the City of Nashua as an additional insured** and reflect on the certificate of insurance. Professional Engineer is responsible for filing updated certificates of insurance with the City of Nashua's Risk Management Department during the life of the contract.

- All deductibles and self-insured retentions shall be fully disclosed in the certificate(s) of insurance.
- If aggregate limits of less than $2,000,000 are imposed on bodily injury and property damage, Professional Engineer must maintain umbrella liability insurance of at least $1,000,000. All aggregates must be fully disclosed on the required certificate of insurance.
- The specified insurance requirements do not relieve Professional Engineer of its responsibilities or limit the amount of its liability to the City of Nashua or other persons, and Professional Engineer is encouraged to purchase such additional insurance, as it deems necessary.
➢ The insurance provided herein is primary, and no insurance held or owned by the City of Nashua shall be called upon to contribute to a loss.
➢ Professional Engineer is responsible for and required to remedy all damage or loss to any property, including property of the City of Nashua, caused in whole or part by Professional Engineer or anyone employed, directed, or supervised by Professional Engineer.

12. INDEMNIFICATION Regardless of any coverage provided by any insurance, Professional Engineer agrees to indemnify and hold harmless the City of Nashua, its agents, officials, employees and authorized representatives and their employees from and against any and all suits, causes of action, legal or administrative proceedings, arbitrations, claims, demands, damages, liabilities, interest, attorney’s fees, costs and expenses of any kind or nature in any manner caused, occasioned, or contributed to in whole or in part by reason of any negligent act, omission, or fault or willful misconduct, whether active or passive, of Professional Engineer or of anyone acting under its direction or control or on its behalf in connection with or incidental to the performance of this contract. Professional Engineer’s indemnity, defense and hold harmless obligations, or portions thereof, shall not apply to liability caused by the negligence or willful misconduct of the party indemnified or held harmless.

13. FISCAL CONTINGENCY All payments under this contract are contingent upon the availability to the City of Nashua of the necessary funds. This contract shall terminate and the City of Nashua’s obligations under it shall be extinguished at the end of any fiscal year in which the City of Nashua fails to appropriate monies for the ensuing fiscal year sufficient for the performance of this contract.

Nothing in this contract shall be construed to provide Professional Engineer with a right of payment over any other entity. Any funds obligated by the City of Nashua under this contract that are not paid to Professional Engineer shall automatically revert to the City of Nashua’s discretionary control upon the completion, termination, or cancellation of the agreement. The City of Nashua shall not have any obligation to re-award or to provide, in any manner, the unexpended funds to Professional Engineer. Professional Engineer shall have no claim of any sort to the unexpended funds.

14. COMPENSATION Review by the City of Nashua of Professional Engineer’s submitted monthly invoice forms and progress reports for payment will be promptly accomplished by the City of Nashua. If there is insufficient information, the City of Nashua may require Professional Engineer to submit additional information. Unless the City of Nashua, in its sole discretion, decides otherwise, the City of Nashua shall pay Professional Engineer in full within 30 days of approval of the submitted monthly invoice forms and progress reports.

15. COMPLIANCE WITH APPLICABLE LAWS Professional Engineer, at all times, shall fully and completely comply with all applicable local, state and federal laws, statutes, regulations, ordinances, orders, or requirements of any sort in carrying out the obligations of this contract, including, but not limited to, all federal, state, and local accounting procedures and requirements, all immigration and naturalization laws, and the Americans With Disabilities Act. Professional Engineer shall, throughout the period services are to be performed under this contract, monitor for any changes to the applicable laws, statutes, regulations, ordinances, orders, or requirements, shall promptly notify the City of Nashua in writing of any changes to the same relating to or affecting this contract, and shall submit detailed documentation of any effect of the change in terms of both time and cost of performing the contract.

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16. **Nondiscrimination** If applicable or required under any federal or state law, statute, regulation, order, or other requirement, Professional Engineer agrees to the following terms. Professional Engineer will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. Professional Engineer agrees to take affirmative action to employ, advance in employment, or to otherwise treat qualified, handicapped individuals without discrimination based upon physical or mental handicap in all employment practices, including but not limited to the following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, rates of pay, or other forms of compensation and selection for training, including apprenticeship.

Without limitation of the foregoing, Professional Engineer's attention is directed to “Title 41” Public Contracts and Property Management” C.F.R. Subtitle B “Other Provisions Relating to Public Contracts” Section 60 “Office of Federal Contract Compliance Programs, Equal Employment, Department of Labor” which, by this reference, is incorporated in this contract.

Professional Engineer agrees to assist disadvantaged business enterprises in obtaining business opportunities by identifying and encouraging disadvantaged suppliers, consultants, and subconsultants to participate to the extent possible, consistent with their qualification, quality of work, and obligation of Professional Engineer under this contract.

In connection with the performance of work under this contract, Professional Engineer agrees not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, age, or sexual orientation. This agreement includes, but is not 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.

Professional Engineer agrees, if applicable, to insert these provisions in all subcontracts, except for subcontracts for standard commercial supplies or raw materials. Any violation of any applicable provision by Professional Engineer shall constitute a material breach of the contract.

17. **Endorsement** Professional Engineer shall seal and/or stamp and sign professional documents including drawings, plans, maps, reports, specifications, and other instruments of service prepared by Professional Engineer or under its direction as required under the laws of the State of New Hampshire.

18. **Assignment, Transfer, Delegation, or Subcontracting** Professional Engineer shall not assign, transfer, delegate, or subcontract any rights, obligations, or duties under this contract without the prior written consent of the City of Nashua. Any such assignment, transfer, delegation, or subcontracting without the prior written consent of the City of Nashua is void. Any consent of the City of Nashua to any assignment, transfer, delegation, or subcontracting shall only apply to the incidents expressed and provided for in the written consent and shall not be deemed to be a consent to any subsequent assignment, transfer, delegation, or subcontracting. Any such assignment, transfer, delegation, or subcontract shall require compliance with or shall incorporate all terms and conditions set forth in this agreement, including all incorporated Exhibits and written amendments or modifications. Subject to the foregoing provisions, the contract inures to the benefit of, and is binding upon, the successors and assigns of the parties.

19. **City Inspection of Contract Materials** The books, records, documents and accounting procedures and practices of Professional Engineer related to this contract shall be subject to inspection, examination and audit by the City of Nashua, including, but not limited to, the contracting agency, the Board of Public Works, Corporation Counsel, and, if applicable, the Comptroller General of the United States, or any authorized representative of those entities.
20. **DISPOSITION OF CONTRACT MATERIALS** Any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials, including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Professional Engineer in the performance of its obligations under this contract shall be the exclusive property of the City of Nashua and all such materials shall be remitted and delivered, at Professional Engineer's expense, by Professional Engineer to the City of Nashua upon completion, termination, or cancellation of this contract. Alternatively, if the City of Nashua provides its written approval to Professional Engineer, any books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Professional Engineer in the performance of its obligations under this contract must be retained by Professional Engineer for a minimum of four years after final payment is made and all other pending matters are closed. If, at any time during the retention period, the City of Nashua, in writing, requests any or all of the materials, then Professional Engineer shall promptly remit and deliver the materials, at Professional Engineer's expense, to the City of Nashua. Professional Engineer shall not use, willingly allow or cause to have such materials used for any purpose other than the performance of Professional Engineer's obligations under this contract without the prior written consent of the City of Nashua.

The City of Nashua acknowledges that the Professional Engineer's Instruments of Service are not represented to be suitable for use or reuse for any other applications or site without written verification from the Professional Engineer and any such use or reuse without written verification from the Professional Engineer will be at the City of Nashua's sole risk and without liability to the Professional Engineer.

21. **PUBLIC RECORDS LAW, COPYRIGHTS, AND PATENTS** Professional Engineer expressly agrees that all documents ever submitted, filed, or deposited with the City of Nashua by Professional Engineer (including those remitted to the City of Nashua by Professional Engineer pursuant to paragraph 20), unless designated as confidential by a specific statute of the State of New Hampshire, shall be treated as public records and shall be available for inspection and copying by any person, or any governmental entity.

No books, reports, studies, photographs, negatives or other documents, data, drawings or other materials including but not limited to those contained in media of any sort (e.g., electronic, magnetic, digital) prepared by or supplied to Professional Engineer in the performance of its obligations under this contract shall be the subject of any application for a copyright or patent by or on behalf of Professional Engineer. The City of Nashua shall have the right to reproduce any such materials.

Professional Engineer expressly and indefinitely waives all of its rights to bring, including but not limited to, by way of complaint, interpleader, intervention, or any third party practice, any claims, demands, suits, actions, judgments, or executions, for damages or any other relief, in any administrative or judicial forum, against the City of Nashua or any of its officers or employees, in either their official or individual capacity of the City of Nashua, for violations of or infringement of the copyright or patent laws of the United States or of any other nation. Professional Engineer agrees to indemnify, to defend, and to hold harmless the City of Nashua, its representatives, and employees from any claim or action seeking to impose liability, costs, and attorney fees incurred as a result of or in connection with any claim, whether rightful or otherwise, that any material prepared by or supplied to Professional Engineer infringes any copyright or that any equipment, material, or process (or any part thereof) specified by Professional Engineer infringes any patent.

Professional Engineer shall have the right, in order to avoid such claims or actions, to substitute at its expense non-infringing materials, concepts, products, or processes, or to modify such
infringing materials, concepts, products, or processes so they become non-infringing, or to obtain the necessary licenses to use the infringing materials, concepts, products, or processes, provided that such substituted or modified materials, concepts, products, or processes shall meet all the requirements and be subject to all the terms and conditions of this contract.

22. **FINAL ACCEPTANCE** Upon completion of all work under the contract, Professional Engineer shall notify the City of Nashua in writing of the date of the completion of the work and request confirmation of the completion from the City of Nashua. Upon receipt of the notice, the City of Nashua shall confirm to Professional Engineer in writing that the whole of the work was completed on the date indicated in the notice or provide Professional Engineer with a written list of work not completed. With respect to work listed by the City of Nashua as incomplete, Professional Engineer shall promptly complete the work and the final acceptance procedure shall be repeated. The date of final acceptance of a project by the City of Nashua shall be the date upon which the Board of Public Works or other designated official accepts and approves the notice of completion.

23. **TAXES** Professional Engineer shall pay all taxes, levies, duties, and assessments of every nature due in connection with any work performed under the contract and make any and all payroll deductions required by law. The contract sum and agreed variations to it shall include all taxes imposed by law. Professional Engineer hereby indemnifies and holds harmless the City of Nashua from any liability on account of any and all such taxes, levies, duties, assessments, and deductions.

24. **NON-WAIVER OF TERMS AND CONDITIONS** None of the terms and conditions of this contract shall be considered waived by the City of Nashua. There shall be no waiver of any past or future default, breach, or modification of any of the terms and conditions of the contract unless expressly stipulated to by the City of Nashua in a written waiver.

25. **RIGHTS AND REMEDIES** The duties and obligations imposed by the contract and the rights and remedies available under the contract shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

26. **PROHIBITED INTERESTS** Professional Engineer shall not allow any officer or employee of the City of Nashua to have any indirect or direct interest in this contract or the proceeds of this contract. Professional Engineer represents that no officer or employee of the City of Nashua has any direct or indirect interest, whether contractual, noncontractual, financial or otherwise, in this contract or in the business of Professional Engineer. If any such interest comes to the attention of Professional Engineer at any time, a full and complete disclosure of the interest shall be immediately made in writing to the City of Nashua. Professional Engineer also represents that it presently has no interest and that it will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. Professional Engineer further represents that no person having such an interest shall be employed in the performance of this contract. If City of Nashua determines that a conflict exists and was not disclosed to the City of Nashua, it may terminate the contract at will or for cause in accordance with paragraph 8.

In the event Professional Engineer (or any of its officers, partners, principals, or employees acting with its authority) is convicted of a crime involving a public official arising out or in connection with the procurement of work to be done or payments to be made under this contract, City of Nashua may terminate the contract at will or for cause in accordance with paragraph 8. Upon termination, Professional Engineer shall refund to the City of Nashua any profits realized under this contract, and Professional Engineer shall be liable to the City of Nashua for any costs incurred by the City of Nashua in completing the work described in this contract. At the
discretion of the City of Nashua, these sanctions shall also be applicable to any such conviction obtained after the expiration or completion of the contract.

Professional Engineer represents that no gratuities (including, but not limited to, entertainment or gifts) were offered or given by Professional Engineer to any officer or employee of the City of Nashua with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending or making of any determinations with respect to the performance of this contract. If City of Nashua determines that such gratuities were or offered or given, it may terminate the contract at will or for cause in accordance with paragraph 8.

The rights and remedies of this section shall in no way be considered for be construed as a waiver of any other rights or remedies available to the City of Nashua under this contract or at law.

27. **THIRD PARTY INTERESTS AND LIABILITIES** The City of Nashua and Professional Engineer, including any of their respective agents or employees, shall not be liable to third parties for any act or omission of the other party. This contract is not intended to create any rights, powers, or interest in any third party and this agreement is entered into for the exclusive benefit of the City of Nashua and Professional Engineer.

28. **SURVIVAL OF RIGHTS AND OBLIGATIONS** The rights and obligations of the parties that by their nature survive termination or completion of this contract shall remain in full force and effect.

29. **SEVERABILITY** In the event that any provision of this contract is rendered invalid or unenforceable by any valid act of Congress or of the New Hampshire legislature or any court of competent jurisdiction, or is found to be in violation of state statutes or regulations, the invalidity or unenforceability of any particular provision of this contract shall not affect any other provision, the contract shall be construed as if such invalid or unenforceable provisions were omitted, and the parties may renegotiate the invalid or unenforceable provisions for sole purpose of rectifying the invalidity or unenforceability.

30. **MODIFICATION OF CONTRACT AND ENTIRE AGREEMENT** This contract constitutes the entire contract between the City of Nashua and Professional Engineer. The parties shall not be bound by or be liable for any statement, representation, promise, inducement, or understanding of any kind or nature not set forth in this contract. No changes, amendments, or modifications of any terms or conditions of the contract shall be valid unless reduced to writing and signed by both parties.

31. **CHOICE OF LAW AND VENUE** This contract shall be governed exclusively by the laws of the State of New Hampshire and any claim or action brought relating to this contract, the work performed or contracted to be performed thereunder, or referable in anyway thereto shall be brought in Hillsborough County (New Hampshire) Superior Court Southern Judicial District or in the New Hampshire 9th Circuit Court—Nashua and not elsewhere.

32. **RELIANCE ON REPRESENTATIONS** Professional Engineer acknowledges that the City of Nashua will be relying, and shall be entitled to rely, on the representations, undertakings and acknowledgments of Professional Engineer as set forth in this contract. Professional Engineer agrees to notify the City of Nashua promptly if any of its representations, undertakings, or acknowledgments set forth in this contract ceases to be true. Each of the parties represents to the other party that it has full authority to enter into this contract upon the terms and conditions hereof and that the individual executing this contract on its behalf has the requisite authority to bind such party to this contract.
Mr. Kerry Converse  
Environmental Engineer  
Nashua Division of Public Works, Solid Waste Department  
840 West Hollis Street  
Nashua, NH 03062

Re: Proposal for Construction Quality Assurance Services  
Phase III Construction Project  
Four Hills Landfill  
Nashua, New Hampshire

Dear Kerry:

Sanborn, Head & Associates, Inc. (Sanborn Head) is pleased to provide the City of Nashua (City) with this proposal to provide construction quality assurance (CQA) services associated with the construction of Phase III (Project) at the Four Hills Landfill in Nashua, New Hampshire. We understand the Project involves: (i) modifying and improving site drainage and stormwater treatment features; (ii) excavating on-site soils to create the proposed Phase III base grades; (iii) placing and compacting soil fill to achieve the Phase III sideslope subgrade; (iv) processing, placing, and compacting on-site low-permeable soil within the Phase III area; (v) constructing the Phase III primary and secondary liner and leachate collection systems; (vi) constructing the Phase III Sump Riser Building and leachate conveyance piping; and (v) making associated connections to the Phase II leachate and liner systems.

**SCOPE OF SERVICES**

**Task 1 CQA Services**

Sanborn Head will provide on-site CQA personnel consisting of a Site Manager and Monitors to perform the specific monitoring and documentation services defined in the Project’s CQA Plan. Sanborn Head’s CQA Managing Engineer, a Professional Engineer licensed in the State of New Hampshire, will be responsible for the implementation of the CQA services and will oversee the on-site CQA personnel. The CQA Team will monitor the contractor’s work for conformance with the construction documents (e.g., drawings and specifications), track the progress of the Project, and be available to address contractor questions during the Project.

The specific services to be performed by Sanborn Head’s CQA team includes: (i) reviewing and commenting on contractor’s submittals; (ii) documenting materials quantities installed or items constructed by the contractor; and (iii) reviewing and commenting on contractor’s requisitions for payment prior to submittal to the City for final approval. Sanborn Head’s CQA Managing Engineer will visit the site regularly (typically once per week) during construction.
Sanborn Head’s CQA Team also will monitor the following construction activities:

- Excavation of Phase III (on a limited basis only);
- Placement and compaction of soil fill in the Phase III area;
- Modification of existing Detention Pond #6 and the associated site drainage improvements;
- Decommissioning of piezometers, monitoring wells, stormwater pipes, and leachate collection pipes;
- Installation of leachate collection and forcemain/gravity main piping outside the limit of waste;
- Installation of the Phase III liner and leachate collection systems;
- Construction of the Sump Riser Building and associated components; and
- Installation of the perimeter road and supporting infrastructure.

The CQA Team will monitor the installation of the various components of the Phase III liner and leachate collection systems. The components of the liner and leachate collection systems include, listed from top to bottom:

- An 18-inch thick layer of drainage sand;
- A multi-linear drainage geocomposite or a geonet drainage geocomposite;
- A 60-mil thick textured high-density polyethylene (HDPE) geomembrane;
- A geosynthetic clay liner (GCL) (sump area);
- A 12-inch thick layer of drainage sand (base area only);
- A multi-linear drainage geocomposite or a geonet drainage geocomposite (the type of geocomposite will be dependent on contractor pricing);
- A 60-mil thick textured HDPE geomembrane; and
- A 6-inch thick layer of Screened Till.

During earthwork construction, the CQA Team will: (i) monitor excavation activities and review survey data documenting that the subgrade elevations are achieved; (ii) monitor the placement of earth materials; and (iii) test the in-place moisture content and density of compacted materials. Field moisture/density testing, as required, will be performed using a nuclear density gauge in accordance with current ASTM standards.

The CQA Team will observe and document the construction of the new site drainage components, the leachate management system modifications, and the Sump Riser Building. Allowed variances from the construction documents will be noted and photographed.

Sanborn Head will review manufacturers’ data regarding the quality of resins used in the production of the geomembranes and manufacturers’ certifications for the geosynthetic components of the liner system against the Project specifications. Only geosynthetic
materials that have the proper manufacturer documentation will be accepted for use in construction. Conformance samples of the accepted geosynthetics will be obtained either at the manufacturer’s facility or from material delivered to the Project site. Sanborn Head will select the rolls to be sampled for testing at a laboratory experienced in geosynthetic testing. Conformance test results will be reviewed before approval is given for deployment of the geomembrane and/or geocomposite.

During construction, Sanborn Head will:

- Provide up to two Monitors to document activities. For budgeting purposes, we assume that one Monitor will be needed throughout construction and one additional Monitor will be needed for 4 weeks during the liner system installation;
- Collect samples for conformance testing from the geomembrane and geocomposite;
- Observe and document the geosynthetic installation contractor’s work and quality control procedures;
- Obtain samples of earth materials including Structural Fill, Drainage Sand, Screened Till, and roadway soils for testing at a subcontracted geotechnical laboratory;
- Perform field moisture/density tests on compacted Structural Fill, Screened Till, and roadway materials;
- Collect samples of welded geomembrane seams and forward them to a subcontracted geosynthetics laboratory for destructive testing; and
- Prepare Daily Field Reports to document the day-to-day construction activities.

Task 2 Construction Meetings/Documentation
Sanborn Head’s CQA Managing Engineer and/or Site Manager will attend weekly construction progress meetings with the contractor and the City. Construction progress meetings are anticipated to be held weekly at the site and will include discussions about the current work progress, planned activities for the upcoming week, and new business or revisions to the Project. Sanborn Head will take minutes of the meetings, which will be issued to the City, the contractor, and the NHDES. Sanborn Head will also prepare bi-weekly summaries of the construction progress for the City’s use in submitting bi-weekly progress updates to the NHDES Solid Waste Bureau as required by the Solid Waste Rules.

Task 3 CQA Report
Sanborn Head will prepare a CQA Report that documents the observations made during construction and includes copies of submittal review forms, geotechnical and geosynthetic laboratory test results, pipe pressure test results, geosynthetic installation documentation and Record Drawings. The Record Drawings will be based on the Construction Drawings and will show the surveyed as-built locations and elevations of the Project components as provided by the contractor. As appropriate, design details will be modified to depict the actual installations. The CQA Report will be prepared under the direction of a Professional Engineer licensed in the State of New Hampshire and submitted to the NHDES following review by the City.
ASSUMPTIONS

Based on our experience and our understanding of the Project components, we assume the following:

- Construction will take approximately 16 weeks, including about 4 weeks for geosynthetic installation. We expect that each week will consist of approximately 5 work days that are 10 hours in duration (7 am to 5 pm Monday thru Friday) and one work day that is approximately 5 hours in duration (8 am to 1 pm Saturday).
- Construction meetings will occur weekly during construction and will be no longer than one hour in length.
- There will be one material source for each type of earthwork material.
- The contractor will be responsible for surveying geosynthetics and will provide the data to Sanborn Head personnel for use in Record Drawings.
- We anticipate providing the City with a draft of the CQA Report for review about four weeks after the Project is substantially complete. The final report will be completed and submitted to the NHDES about two weeks following receipt of the City’s comments to the draft report.

BUDGET ESTIMATE AND BASIS OF BILLINGS

The estimated budget costs for Sanborn Head to complete the scope of services described above is $255,000. A breakdown of cost is presented below. Billings for our services will be based on actual accrued labor and expenses in accordance with the enclosed fee schedule. We will not invoice in excess of the budgeted amount without your approval.

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CQA Services</td>
<td>$217,500</td>
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<tr>
<td>2</td>
<td>Construction Meetings/Documentation</td>
<td>$17,500</td>
</tr>
<tr>
<td>3</td>
<td>CQA Report</td>
<td>$20,000</td>
</tr>
<tr>
<td></td>
<td><strong>Total Estimated Cost</strong></td>
<td><strong>$255,000</strong></td>
</tr>
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</table>

SCHEDULE

Sanborn Head is available to begin working on this Project following written authorization to proceed from the City. We expect that services under this scope of work will commence in May 2019.

ACCEPTANCE AND TERMS OF ENGAGEMENT

We understand that the City will issue a new Contract for Professional Services and a Purchase Order to Sanborn Head for the scope of services and budget estimate described herein.
Thank you for the opportunity to submit our proposal for CQA services. We look forward to working with you on this Project. Please do not hesitate to call us should you require additional information.

Very truly yours,
SANBORN, HEAD & ASSOCIATES, INC.

Edward A. Galvin, P.E.
Project Manager

Brian J. Beaudoin
Vice President

TLP/EAG/ESS/BJBJ:let

Enclosure: Schedule of Fees
**SANBORNS, HEAD & ASSOCIATES, INC.**

**Schedule of Fees for Fiscal Year Ending 2019**
**City of Nashua**

<table>
<thead>
<tr>
<th>Position</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Vice President</td>
<td>$208</td>
</tr>
<tr>
<td>Vice President</td>
<td>$198</td>
</tr>
<tr>
<td>Project Director</td>
<td>$186</td>
</tr>
<tr>
<td>Senior Project Manager</td>
<td>$159</td>
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<tr>
<td>Project Manager</td>
<td>$148</td>
</tr>
<tr>
<td>Senior Project Engineer/Geologist</td>
<td>$130</td>
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<tr>
<td>Project Engineer/Geologist</td>
<td>$122</td>
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<tr>
<td>Engineer/Geologist</td>
<td>$111</td>
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<tr>
<td>Supervising Technician</td>
<td>$99</td>
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<tr>
<td>Senior Engineering Technician</td>
<td>$90</td>
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<tr>
<td>Engineering Technician</td>
<td>$83</td>
</tr>
<tr>
<td>Support Staff</td>
<td>$72</td>
</tr>
</tbody>
</table>

- **Subcontractors and Outside Services**: Cost plus 10%
- **Other Direct Expenses**: Cost plus 10%

Hourly rates will be charged for time worked on the project and for the time required for travel between the office and the meeting or project site. Local travel will be at IRS allowed rates.

Overtime hours will be charged using the hourly rates listed above.

Hourly rates for expert witness testimony, including preparation time, and other special services such as corporate acquisition due diligence studies that generally require a dedicated commitment of senior staff, will be provided upon request.

This fee schedule applies for the City of Nashua fiscal year ending 2019 (from July 1, 2018 to June 30, 2019).
March 14, 2019
Memo #19-134

TO: MAYOR DONCHESS
FINANCE COMMITTEE

SUBJECT: PHASE III LANDFILL CONSTRUCTION (VALUE: $5,525,525)
DEPARTMENT: 168 SOLID WASTE; FUND: BOND

Please see the attached communication from Jeff Lafleur, Solid Waste Department Superintendent dated February 28, 2019 for the information related to this contract.

Pursuant to § 5-78 Major purchases (greater than $10,000) A. All supplies and contractual services, except as otherwise provided herein, when the estimated cost thereof shall exceed $10,000 shall be purchased by formal, written contract from the lowest responsible bidder, after due notice inviting bids.

This funding is contingent upon the approval of bonds for these funds.

The Solid Waste Department Superintendent, Board of Public Works (February 28, 2019 meeting) and the Purchasing Department recommend the approval of this contract in an amount of $5,525,525 to Charter Contracting Company, LLC of Boston, MA.

Respectfully,

Dan Kooken
Purchasing Manager

Cc: J Lafleur L Fauteux
City of Nashua, Public Works Division

To: Board of Public Works           Meeting Date: February 28, 2019

From: Jeff Lafleur, Superintendent
      Solid Waste Department

Re: Phase III Landfill Construction

A. Motion: To approve the contract with Charter Contracting Company, LLC of Boston, MA in the amount of $5,525,525 for the construction of the Phase III Landfill. Funding will be through Department: 168 Solid Waste; Fund: Bond; Activity: Phase III Landfill.

Discussion: On January 18th 2019 the Solid Waste Department put out a request for bid to construct the Phase III Landfill. Seven contractors attended the mandatory pre-bid meeting on January 23rd. All contractors were to submit bids on February 20, 2019 and Charter Contracting Company, LLC of Boston, MA was the only company to submit a bid in the amount of $5,525,525. The amount of the bid is in line with the pre-bid estimate of cost.

The timely completion of the Phase III Landfill is crucial to the continuing operations at the City of Nashua, Four Hills Landfill. Superintendent Jeff Lafleur and Environmental Engineer Kerry Converse recommend awarding the Phase III construction contract to Charter Contracting Company, LLC.
RESOLUTION

AUTHORIZING THE MAYOR AND CITY TREASURER TO ISSUE BONDS NOT TO EXCEED THE AMOUNT OF SIX MILLION DOLLARS ($6,000,000) FOR THE PHASE III LINED LANDFILL EXPANSION OF THE NASHUA FOUR HILLS LANDFILL, TO INCLUDE ENGINEERING SERVICES

CITY OF NASHUA

In the Year Two Thousand and Nineteen

RESOLVED by the Board of Aldermen of the City of Nashua that the Mayor of the City of Nashua and the City Treasurer of the City of Nashua are hereby authorized to issue and sell general obligation bonds of the City, in an aggregate principal not to exceed six million dollars ($6,000,000). The proceeds of said bonds shall be used for the Phase III lined landfill expansion, including engineering services. Life span of said expansion is ten (10) years.

Pursuant to Nashua City Charter §54-a, this resolution requires a “duly advertised public hearing”. Also see N.H. RSA 33:9, which requires a 2/3 vote for passage of this resolution.

The bonds shall be general obligations of the City of Nashua, payable as to principal and interest from ad valorem taxes, which will be levied without limitation as to rate or amount on all taxable property within the territorial limits of the City of Nashua.

The bonds shall bear the manual or facsimile signature of the City Treasurer and the Mayor. In accordance with Chapter 91 of the New Hampshire Acts of 2005, bonds issued pursuant to this resolution shall not require an authenticating certificate of a bank or trust company doing business in the State of New Hampshire or The Commonwealth of Massachusetts, or the Commissioner of Revenue Administration.

The bonds are to be issued in fully-registered form by means of a book-entry system or otherwise and shall have such terms and conditions and be in such form, subject to the provisions of this resolution and applicable law, as shall be determined by the Mayor and the City Treasurer.

RESOLVED FURTHER, that the Mayor is authorized to enter into the required contracts therefor as well as any amendments to be made thereto or any other documentation necessary for the receipt of said funds.
LEGISLATIVE YEAR 2019

RESOLUTION: R-19-114

PURPOSE: Authorizing the Mayor and City Treasurer to issue bonds not to exceed the amount of six million dollars ($6,000,000) for the Phase III lined landfill expansion of the Nashua Four Hills Landfill, to include engineering services.

SPONSOR(S): Mayor Jim Donchess

COMMITTEE ASSIGNMENT:

FISCAL NOTE: It is anticipated that the bonds will be sold beginning in FY 20 and continuing through FY 21. It is projected that the interest rate for the bonds will be approximately 3.5% and the total cost of the bond over 10 years will be approximately $7,155,000, including interest. The average annual payment will vary as the bonds will be sold over a two year period and the payment plan may include a deferred principal payback plan.

ANALYSIS

This resolution authorizes the City to issue and sell general obligation bonds up to $6,000,000 for Phase III lined landfill expansion at the Four Hills Landfill, including engineering services. This project is in the FY2019 Capital Improvements Program. This legislation should be referred to the Board of Public Works for review and approval.

Pursuant to Nashua City Charter §54-a, this resolution requires a “duly advertised public hearing”. Also see NH RSA 33:9, which requires a 2/3 vote for passage of this resolution.

Approved as to content, account structure, numbers and amount: Financial Services Division

By: 

Approved as to form: Office of Corporation Counsel

By: 

Date: March 14, 2019
LANDFILL EXPANSION
PHASE III

Construction Specifications
and
Contract Documents

Prepared By:
City of Nashua, New Hampshire
Division of Public Works
Engineering Department

January 2019
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3. Bid Form and Contractor’s Qualifications
4. Schedule of Values and Bid Item Definitions
5. Performance and Payment Bonds, Certificate of Liability Insurance
6. Agreement
7. General Conditions
8. Exhibits
   - A. Notice of Award
   - B. Notice to Proceed
   - C. Change Order
   - D. Certificate of Substantial Completion
9. Technical Specifications

TC - 1 of 1
DIVISION 1

INVITATION TO BID
January 25, 2019

IFB0593-022019

PHASE III LANDFILL EXPANSION

ADDENDUM #1

Information included in this document becomes a part of the original IFB.

If you are submitting a paper bid, please sign below to indicate receipt of this additional information and include this page with your bid submittal. If you are submitting a bid via Bid Express please be sure to acknowledge the addendum on the website before submitting your bid.

ADDENDUM 1 is being issued to provide additional documents and clarification.

Please see the attached document for information.

All other aspects of the original document remain the same.

Failure to acknowledge the addendum will result in the bid submittal being disqualified.

Sincerely,

[Signature]

Danielle Greenberg
City of Nashua – Purchasing Agent II
greenbergd@nashuanh.gov

Addendum #1 received and incorporated into bid submittal for IFB0593-022019. Please sign and include this addendum in your bid package.

[Signature]

Timothy J. Cady, Director/Program Services

January 19, 2019
(Date)

Charter Contracting Company, LLC
(Name of Firm)
Addendum 1

- The date for questions to be submitted is being changed from Monday, January 28, 2019 at noon to Friday, February 1st, 2019 at Noon.
- Please follow this link to the Sahrefile:
  - https://sanbornhead.sharefile.com/f/fq71e799-23f2-4729-a6c3-51ca9b4a3a1

- For users who have not used Sharefile before, please enter the email address included on the Pre-Bid sign-in sheet and use the “forgot password” function. A temporary password will be emailed to you. From there, the user can setup a personalized password if they wish to do so. If problems occur, please contact Eddie Galvin at egalvin@sanbornhead.com.
- Items in folder include:
  - Construction Quality Assurance Plan
  - AutoCAD files that include existing and proposed design information
February 7, 2019

IFB0593-022019

PHASE III LANDFILL EXPANSION

ADDENDUM #2

Information included in this document becomes a part of the original IFB.

If you are submitting a paper bid, please sign below to indicate receipt of this additional information and include this page with your bid submittal. If you are submitting a bid via Bid Express please be sure to acknowledge the addendum on the website before submitting your bid.

ADDENDUM 2 is being issued to respond to submitted questions.

Please see the attached document for information.

All other aspects of the original document remain the same.
Failure to acknowledge the addendum will result in the bid submittal being disqualified.

Sincerely,

[Signature]

Danielle Greenberg
City of Nashua – Purchasing Agent II
greenbergd@nashuanh.gov

Addendum #2 received and incorporated into bid submittal for IFB0593-022019. Please sign and include this addendum in your bid package.

[Signature]

(Timothy J. Cady, Director/Program Services)

January 19, 2019
(Date)

Charter Contracting Company, LLC
(Name of Firm)
Response to Questions from Bidders (Addendum #2)

1. Page 4 of 24 of the drawing set entitles “Secondary Base Grading Plan” states, "Overhead electric to tie into existing power supply located near existing Phase I-III leachate manhole #1 and secondary witness tank (to be coordinated with Eversource prior to construction)." Please confirm this work is not part of the Contract and will be completed by the Owner prior to notice to proceed.

   This work is part of the contract and the contractor is responsible for coordinating with Eversource to bring power to the proposed pump building.

2. Is a bid bond required? If so, please indicate the percentage that is requested.

   A Bid Bond will not be required for this project

3. Is there an existing SWPPP plan for the site that the Contractor will have to adhere to?

   Yes, there is an existing SWPPP for the site; however, it is specific to landfill activities, not construction. The contractor is expected to adhere to the stormwater controls required by the plans and specifications. The selected contractor shall be responsible for developing a Construction SWPPP.

4. Contractor is unaware of how the project is funded (General Condition Page 23 of 53, 6.09 Laws and Regulations, D), please provide the appropriate wage rates, either the Davis-Bacon Prevailing Wage Rates or City of Nashua Prevailing Rates for Public Works, for the project?

   There are no prevailing wage rates for this project.

5. If the final design report is submitted on July 1st, please provide the appropriate review period a contractor shall assume that it will take NH DEP to approve the permit and to allow unrestricted access to complete the cell.

   A response from NHDES is expected within 30-days of the submission of the groundwater separation report, which will establish the base grades of the landfill.

6. Please confirm that the contractor has been provided the most up-to-date pre-existing conditions survey with the bid documents. Drawing 1 of 24 states that base map is from 2010.
The pre-existing conditions shown on Drawing 1 have not changed substantially since 2010.

7. **Please confirm the boundary line for bid item number 24 topsoil and seeding. Contractor takeoff is closer to 7 acres.**

   See attached Topsoil and Seeding Figure and revised Schedule of Values.

8. **Note 1 on detail 2 on sheet 20 of 24 says to line pond 6 and the forebay with 12-inches of screened till. Please confirm the limits of detention pond 6 and the forebay to determine the limits of the screened till.**

   The limit of the forebay and Pond 6 is the elevation 210-foot contour. Pond 6 and its forebay is estimated to have a surface area of about 28,700 square feet.

9. **Note 1 on detail 2 on sheet 20 of 24 says to remove the sediment within pond 6. How much sediment is anticipated to be removed from pond 6?**

   The depth of built up sediment within Pond 6 is unknown. For this bid, the bidders shall assume removing sediment in the pond that is no more than 12 inches thick.

10. **Please confirm that the secondary sand location on sheet 4 of 24 is accurate. The secondary sand hatching shown on sheet 4 conflicts with the liner system details on sheet 11 of 24. Is the 1' sand layer across the entire cell?**

   Secondary Sand shall only be placed within areas of the liner system that are sloped at 2 and 4 percent as shown by the limits on Sheet 4 of the Construction Drawings. Areas of the liner system sloped at 10 percent and 2(H):1(V) do not require Secondary Sand.

11. **Please provide the as-built plans for the existing litter control fence so that contractor can appropriately bid the removal and re-installation.**

   See the attached Structure As-built Plan, dated 3/31/2009 for the location of the litter fence, and the description of the litter fence installation in the Phase II landfill QA/QC report. Field measurements confirm that the posts are spaced 50 feet on center.

12. **For bid Item #16, shall the contractor anticipate coming into contact with leachate or will the leachate within the cell be pumped down to complete the work?**

   It is not anticipated that the contractor will encounter leachate in making connections to the Phase II leachate collection system. However, the contractor must take appropriate worker safety measures while performing the work in case leachate and/or landfill gas is encountered.
13. At the pre-construction meeting, it was discussed that stumps and roots from the clearing and grubbing would remain onsite. Please confirm the location where the contractor shall stockpile stumps for further use by the Owner.

An area to stockpile stumps and roots will be available in the vicinity of the compost windrows on the northeastern portion of the site.

14. Please designate the area where all topsoil shall be stockpiled as described in 02100 – 3.1E.

An area to stockpile topsoil will be available in the vicinity of the compost windrows on the northeastern portion of the site.

15. If there is an under-run of topsoil (when comparing the stripped area to the placement area) can the Contractor utilize the topsoil from the composting area onsite?

The City utilizes the compost for daily landfill cover and other City projects. It is therefore not available to supplement topsoil for this project.

16. At the pre-construction meeting, it was noted that a large stockpile of material (potentially clay) was in the middle of the Phase III area. Is this material included on the existing conditions plan?

The stockpiled soil material is more adjacent to the landfill footprint, rather than in it. It is located within the proposed slope on the eastern side of the Phase III footprint. For this bid, the contractor shall assume that 2,500 CY of Screened Till is available within this area and the remaining Screened Till required to complete the project needs to be imported. The attached Schedule of Values was updated accordingly.

17. Is there any physical testing of the clay material onsite?

There is no physical testing data for the on-site clay material. For this bid, contractors shall assume it is suitable for use as Screened Till.

18. At the pre-construction meeting, it was noted that the selected contractor would have to handle and transport stockpiled debris and oversized rocks located within the Phase III limits. Where shall the contractor move this material? How does the contractor get paid to move this material? Is there an estimated volume?

Stockpiled debris and rocks can be moved to a designated area on the northeast portion of the site. There is no estimated volume for this material. Payment for this work is covered under Bid Item #4, Grubbing and Topsoil Removal.

19. Specification section 02200, 3.6D states, "Subgrade for geosynthetic placement shall be proof-rolled by at least (4) passes of a 10,000-pound vibratory, smooth-
drum roller to demonstrate strength." This is will not be possible along the slopes for safety issues, can contractor plan to smooth screened till area with an excavator bucket if compaction is met?

The City encourages the bidders to consider using construction methods and equipment capable of meeting the design intent. Alternative means of compaction may be presented in the bid and will be considered by the City provided there is sufficient justification/documentation for its use and ability to meet the intent of the design.

20. Does the Owner have an Environmental Monitor that is familiar with the site or has been previously been utilized onsite?

The City typically does not use an Environmental Monitor for landfill construction projects. However, the City will retain an engineering firm familiar with the site to provide construction quality assurance services during construction.

21. Who is the professional survey company that is utilized by the Owner?

There are several professional survey companies who have previously worked on the Four Hills site. They include, but are not limited to Hayner/Swanson, Inc. and WSP USA, Inc., both located in Nashua, NH.

22. Can HDPE piping be tested with air in lieu of hydrostatic testing?

Yes, air testing is acceptable. Specification 15210 will be revised to include air testing requirements and will be included in Addendum #3.

23. Is there a power drop where contractor is to locate the construction trailer?

There is a power drop with a meter and circuit breaker panel used by previous construction trailers located along the main haul road adjacent to retention pond #2. The power drop has not been used in several years; therefore, the City does not guarantee the viability of the power drop. The contractor is free to evaluate alternate locations for the construction trailer and power connection if this location is not convenient.

24. Where can contractor fill water truck for dust control?

There two hydrants near the landfill office building that are available for filling a water truck.

25. Please confirm the unit for 27B is LF and not LS.

The unit for 27B is LF. See the attached revised Schedule of Values.
26. For Alternate bid Item A27, is the contractor to setup/install the portable litter fence?

If there are components of the portable fence to be installed or set-up, then yes. The portable fences should be delivered directly to the landfill face ready to use.

27. Detail 4 on sheet 21 shows some dimensions for the drain manhole. Please provide additional information about the drain manhole including the rim, inlet and outlet elevations. The size of the structure in the detail does not have the height of the structure.

Inlet and outlet elevations are included in the culvert schedule for C-1 and C-2 on Sheet 21 of the Construction Drawings. The rim elevation shall be 229.0 feet and the total interior height of the structure shall be a minimum of 5 feet.

28. Detail 2 on sheet 12 of 24 shows the 31” mid-splice beam guardrail. The detail does not show what should be on the end for the guardrail NHDOT typically requires terminal end anchorages or MASH tangent end treatments. Are one of these to be used?

The contractor shall install Type G-2 terminal units for proposed guardrail.

29. Bid Item 7 section H: states Furnishing and placing drainage sand to construct interim stormwater berms is incidental to this bid item but it does not appear on any of the drawings?

There are no interim stormwater berms proposed as part of this work.

30. There is no survey specification included. Can contractor perform their own survey?

Yes.

31. Does the geomembrane panel drawing need to be stamped by a PLS?

No.

32. On previous projects, have contractors screened the till from an onsite source?

Refer to question #16.

33. Is it the intent of the contract to import the screened till?

The intent is to utilize on-site soils. The contractor shall import soil as necessary. Refer to question #16.

34. What size diameter are the PVC wells to be decommissioned and the wells to be extended?
The boring/well logs for the wells to be decommissioned are attached. PVC well casing diameters for the wells to be raised are as follows:

Wells MW-110S & R = 2” diameter;  
Wells MW-111S & R = 1.5” diameter; and,  
Well B-4 = 1.5” diameter.

35. Please provide a detail on how the wells are to be extended.

The NHDES does not provide guidance related to well extensions, however, standard construction practices would still apply to the materials used for the extended wells (i.e., no glues or solvents, use of lockable cap, maintain seal at surface, etc.). Attached is a schematic provided by NHDES. The contractor would be required to remove existing surface completion components and extend the existing PVC pipe without the use of glues or solvents. Contractor can use a variety of couplings including, but not limited to, slip couplings, Fernco flexible couplings, or compression couplings. Soil placement around the extended PVC pipe shall be performed with care and typical surface completion components shall be installed at the proposed finish grade.

36. Please confirm the portable litter fence shall be 50’ lengths. Manufacturer said that the fence comes in 40’ lengths.

Either 40-foot or 50-foot lengths for the portable litter fence are acceptable.

37. Page 3 of the Bid Form Section 8.01 (B) refers to “Bid Bond”. Will a bid bond be required? If so, will a form be provided? What will be the required percentage?

A Bid Bond will not be required for this project.

38. Can boring/drilling logs be provided for the existing monitoring wells and piezometers that need to be decommissioned?

Yes, the boring/drilling logs for the wells and piezometers to be decommissioned are attached.

39. The bid item definition for Item 7h-Primary Drainage Sand, spec. sheet 38 of 255, states that furnishing and installing of drainage sand for interim stormwater berms is incidental to the item. Where are the stormwater berms called out? Can you please provide a detail for the berms?

There are no interim stormwater berms proposed as part of this work.

40. On page 17 of 24 on the 11 x 17 plans, tilted SUMP RISER BUILDING ELEVATIONS AND SECTIONS, there is a written section sub-titled Building Components. Under the Building Components section, a Sparling Instrument 656 Tigermag flanged magnetic flow meter is specified. Can a flanged 2 inch Badger Magnetic Flow Meter, M2000 be substituted?
Yes, as long as the Badger flow meter is a functional equivalent to the specified Tigermag flow meter.

41. On page 17 of 24 on the 11 x 17 plans, tilted SUMP RISER BUILDING ELEVATIONS AND SECTIONS, there is a written section sub-titled Building Components. Under the Building Components section there is another section sub-titled Primary/Secondary Pump. An EPG 1 H.P. 220V pump is specified. Can an equivalent QED pump be approved as equal?

Yes, as long as the QED pump is a functional equivalent to the specified EPG pump.

42. On drawing 17 of 24, detail 5, Sump Riser Building Piping Isometric drawing, the secondary riser, primary riser and clean out riser do not have flange adapters fused to them. On drawing 18 of 24, detail 1 & 3 again show no flange adapter fused to the end of the pipe or no note describing an 18" flange adapter or back up ring. The drawings currently state that the flange is made of a 1" thick piece of HDPE flat stock and cut to the diameter of the 18" HDPE pipe. It would be more cost effective for the manufacturer of these flanges & The City of Nashua if these flanges were an off the shelf flange that was traditionally bolted to a flange adapter & back up ring fused to the leachate and cleanout risers. Also, a flange adapter fused to the end of each of the three risers would assure a long term positive connection to the risers. I could see a scenario that after multiple times of taking the currently drawn flanges off and on, that the holes could strip and there not be a solid connection to the leachate risers.

Contractors may price the bid item assuming that the detail allows for an off the shelf flange, bolted to a flange adapter & back up ring fused to the leachate and cleanout risers. Please note this option in the bid.

43. I was just wondering how you would like to handle the Nashua Electric control panel for the primary, secondary, and clean out riser pumps. I don’t have any kind of ladder logic line drawings to get an estimate on the control panel. Do you think you will have some kind of print or logic document soon? QED needs this logic to complete the quote for this project.

A proposed logic document for the proposed control panel will be included in Addendum #3 that will be posted during the week of February 11, 2019.

44. Reference: 15210, 2.4; 15210 3.2 C2; Sheet 10, Cleanout Parts List,

Comment: The drawing indicates that epoxy coated 304 fasteners, DI rings and neoprene gaskets are required. Under Section 15210 High Density Polyethylene Pipe, Fittings, and Appurtenances Part 2.4, 1/8" thick Viton Gaskets are called out. In the specs under flange joining carbon steel backing rings and galvanized nuts and bolts are called out. Stainless steel typically needs no additional coating. In addition, under Section 15210 Part C-2 and C-4a it is referenced that
below ground backup rings are to be made of Carbon Steel while above grade backup rings are to be made of Zinc-plated steel.

Recommendation: Please clarify backup ring, gasket, and hardware requirements.

A revised specification will be included in Addendum #3 during the week of February 11, 2019. Please prepare bids as follows:

- All gaskets shall be Viton.
- Below-grade joint hardware shall be Type 304 stainless steel.
- Above-grade hardware shall be zinc-plated unless otherwise noted.
- Hot-dipped galvanized fasteners are not allowed.
- Convoluted stainless steel backup rings shall be used for joining HDPE pipes below grade, and epoxy-coated carbon steel backup flanges shall be used above grade.

45. Reference: 15210, 3.2B.12.

Comment: Under Section 15210 Part 3.2 B-12 It is states “all interior butt fusion weld beads shall be removed from the pipe (i.e., all HDPE pipe must be de beaded) in accordance with the manufacturer’s recommendations”. Does this include the debeading of all perforated pipe as well as the solid pipe?

Perforated pipe is not required to be debeaded.

46. Reference: 4” HDPE Force Main

Comment: Can you clarify the SDR of the force main. By default, it references SDR 17.

Recommendation: Please clarify force main SDR.

The 4-inch diameter HDPE force main shall be SDR-17,
# Schedule of Values - Bid Items

**Phase III Construction - Stage I**  
Four Hills Landfill  
Nashua, New Hampshire  
(Revised February 2019)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Construction Items</th>
<th>Estimated Quantity (w/units)</th>
<th>Bid Unit Prices ($/units)</th>
<th>Extended Prices ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization/Demobilization</td>
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<td>LS</td>
<td>LS</td>
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<tr>
<td>2</td>
<td>Demolition</td>
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<tr>
<td></td>
<td>a. Remove Litter Control Fence</td>
<td>950</td>
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<tr>
<td></td>
<td>b. Remove Existing Culverts</td>
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<td></td>
<td>c. Remove and Salvage Existing Riprap</td>
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<td>d. Tree Removal</td>
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<td></td>
<td>e. Decommissioning Piezometers</td>
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<td></td>
<td>f. Decommissioning Monitoring Well</td>
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<td>3</td>
<td>Erosion and Sediment Control</td>
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<td>a. Filter Log</td>
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<td>Fill Placement</td>
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<td>7</td>
<td>Liner System</td>
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<td>a. Screened Till</td>
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<td>1. From Stockpile</td>
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<td>2. Import</td>
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<td>c. Secondary Drainage Geocomposite</td>
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<td>d. Secondary Drainage Sand Layer</td>
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<td>e. Geosynthetic Clay Liner</td>
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<td>g. Primary Drainage Geocomposite</td>
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<td>h. Primary Drainage Sand Layer</td>
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<td>b. Liner Connection Along Phase II Berm</td>
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<td>Leachate Sumps Construction</td>
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<td>Electrical Construction</td>
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<td>Controls and Instrumentation</td>
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<td>14</td>
<td>Leachate Pumping System</td>
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<td>15</td>
<td>Utility Trench</td>
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<td>Connection to the Phase II Leachate Collection System</td>
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<td>17</td>
<td>Stormwater Basin</td>
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<td>a. Dredging the Existing Portion of the Basin</td>
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<td>b. Remove Portion of Existing Culvert</td>
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<td>c. Low-Permeability Soil</td>
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<td>d. Spillway</td>
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<td>e. Wetland Plantings</td>
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<td>f. Modifying the Existing Discharge Structure</td>
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<td>g. Level Spreader</td>
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<td>18</td>
<td>Riprap-Lined Swales</td>
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<td>Geomembrane-Lined Swale</td>
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<td>Smartditch-Lined Downchute</td>
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### Schedule of Values - Bid Items

Phase III Construction - Stage I  
Four Hills Landfill  
Nashua, New Hampshire  
(Revised February 2019)

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<th>Bid Unit Prices ($/units)</th>
<th>Extended Prices ($)</th>
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<tbody>
<tr>
<td>21</td>
<td>Temporary Slope Diversion Swale</td>
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<td>22</td>
<td>Drain Manhole</td>
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<td>23</td>
<td>Culverts</td>
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<tr>
<td>a. C-1</td>
<td>(36-inch diameter CPP)</td>
<td>1 LS</td>
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<td>LS</td>
</tr>
<tr>
<td>b. C-2</td>
<td>(36-inch diameter CPP)</td>
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<tr>
<td>c. C-3</td>
<td>(18-inch diameter CPP)</td>
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<td>d. C-4</td>
<td>(24-inch diameter CPP)</td>
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<td>Topsoil and Seeding</td>
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<td>25</td>
<td>Gravel Road</td>
<td>7,830 SY</td>
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<td>26</td>
<td>Extend Groundwater Wells</td>
<td>40 LF</td>
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<tr>
<td>27</td>
<td>Litter Control Fence</td>
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<td>a. Install Existing Litter Control Fence</td>
<td>950 LF</td>
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<td>b. Install New Litter Control Fence</td>
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<td>Guardrail</td>
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<td>Payment Bond</td>
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<td>31</td>
<td>Performance Bond</td>
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**Bid Price**
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<th>Alt. Bid Item No.</th>
<th>Construction Items</th>
<th>Estimated Quantity (w/units)</th>
<th>Bid Unit Prices ($/units)</th>
<th>Extended Prices ($)</th>
</tr>
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<td>A7</td>
<td>Leak Detection Survey</td>
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<td>LS</td>
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<td>A24</td>
<td>Screening Vegetation</td>
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<tr>
<td>A27</td>
<td>Portable Litter Fence</td>
<td>4</td>
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</tbody>
</table>

**Bid Price**
February 13, 2019

IFB0593-022019

PHASE III LANDFILL EXPANSION

ADDENDUM #3

Information included in this document becomes a part of the original IFB.

If you are submitting a paper bid, please sign below to indicate receipt of this additional information and include this page with your bid submittal. If you are submitting a bid via Bid Express please be sure to acknowledge the addendum on the website before submitting your bid.

ADDENDUM 3 is being issued to respond to submitted questions and provide further clarification.

Please see the attached document for information.

All other aspects of the original document remain the same. 
Failure to acknowledge the addendum will result in the bid submittal being disqualified.

Sincerely,

[Signature]

Danielle Greenberg
City of Nashua – Purchasing Agent II
greenbergd@nashuah.gov

Addendum #3 received and incorporated into bid submittal for IFB0593-022019.
Please sign and include this addendum in your bid package.

[Signature]

(Authorized Signature) Timothy J. Cady, Director/Program Services

January 19, 2019

(Date)

Charter Contracting Company, LLC

(Name of Firm)
MEMORANDUM

To: Invited Bidders
From: Edward A. Galvin, P.E.
       Eric S. Steinhauser, P.E., CPESC, CPSWQ
File: 3066.09
Date: February 11, 2019
Re: Addendum #3
    Phase III Construction
    Four Hill Landfill
    Nashua, New Hampshire
cc: Jeff LaFleur, City of Nashua
    Kerry Converse, City of Nashua

This addendum shall be part of the Contract Documents for the above-referenced project. Please acknowledge receipt of this Addendum in your proposal(s).

CLARIFICATIONS

1. The selected contractor will be required to pay for any installation required by Eversource to meet the intent of the design. For the purpose of this bid, the contractor shall provide a suggested installation allowance for this work. This allowance will not be held against any of the invited bidders during the proposal evaluation phase as the actual Eversource installation price is unknown at this time.

2. Specification Section 15210 was revised to:
   - Clarify joint hardware requirements; and
   - Include a section on pneumatic testing as an alternate to hydrostatic pressure testing. The revised specification is enclosed.

3. The pump control panel (CP-1) is to be provided by the selected contractor, not the City. In regard to panel control logic, notes are provided on Sheet 17 of the Drawings and are reproduced below:
   - A float switch shall be in the floor sump. If the float switch is closed due to liquid in the leachate building, the leachate pumps shall be shut down and visual and remote alarms shall be activated.
   - Level sensors shall be installed in the leachate sideslope risers to measure liquid levels relative to the base of the sump liner. The level sensors shall control the leachate pump cycles.
The electrically actuated ball valve shall be normally closed. The valve should only open when the primary leachate pump is disabled and the secondary leachate pump is activated.

The primary and secondary sump pumps shall be set to start when the liquid in the respective sump is at a level less than or equal to the respective liner elevation at the upper edge of the sump.

The leachate sump pumps shall shut off when the liquid level is between 3 and 6 inches above the intake of the pump or prior to air infiltration into the pump.

A visual alarm shall activate if the liquid level in the primary or secondary sump is such that a foot or more of head exists on the liner adjacent to the sump (refer to detail 3 on sheet 16 for location of visual alarm indicators).

Leachate indications and totalization data shall be made available for programmable logic controller as indicated in Section 16500 of the project specifications.

Detailed logic control design will be handled during submittal process.

EAG/ESS: cag

Enclosure: Revised Specification (Section 15210)
SECTION 15210
HIGH-DENSITY POLYETHYLENE
PIPE, FITTINGS, AND APPURTEncANCES

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Supply and install high-density polyethylene (HDPE) pipe, fittings, and appurtenance for the leachate collection and conveyance systems.

1.2 SUBMITTALS

A. CONTRACTOR shall submit to ENGINEER the following:
   1. Manufacturing data listing resin type, cell classification, stock density, melt flow, flexural modulus, tensile strength, and coloration.
   2. Pipe Dimensions:
      a. Average outside diameter.
      b. Average inside diameter.
      c. Minimum and average wall thickness.
      d. Approximate weight in pounds per foot.
   3. Manufacturer’s instructions for fusing joints.

B. CONTRACTOR shall submit pipe welding certifications for pipe fusion machine operators prior to beginning fusion operations.

1.3 MANUFACTURER’S QUALITY ASSURANCE

A. The pipe, fittings, and valve manufacturers shall have an established quality assurance (QA) program responsible for inspecting incoming and outgoing materials. At a minimum, incoming polyethylene (PE) materials shall be inspected for density per ASTM D1505, melt flow rate per ASTM D1238, and contamination. The supplier shall certify all incoming PE materials.

B. The pipe and fittings manufacturer shall have an established QA program responsible for assuring the long-term performance of materials and products. Representative samples of PE materials shall be tested against the physical property requirements of this Specification. Each extrusion line and molding machine shall be qualified to produce pressure rated products by taking representative production samples and performing sustained pressure tests in accordance with ASTM D1598.
C. QA testing for representative pipe and fitting samples shall include:

<table>
<thead>
<tr>
<th>Test</th>
<th>Standard</th>
<th>Pipe</th>
<th>Fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ring ESCR</td>
<td>ASTM F1248</td>
<td>Yes</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Sustained pressure at 176°F / 725 psi hoop stress</td>
<td>ASTM D1598</td>
<td>Yes</td>
<td>Yes (f0&gt;100 h)</td>
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<tr>
<td>Sustained pressure at 73°F / 1600 psi hoop stress</td>
<td>ASTM D1598</td>
<td>Yes</td>
<td>Yes (f0&gt;1,000 h)</td>
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</tbody>
</table>

D. All outgoing materials shall be inspected for diameter, wall thickness, length, straightness, out-of-roundness, concentricity, toe-in, inside and outside surface finish, markings, and end cut. Quality control (QC) shall perform tests of density, melt flow rate, carbon content, and carbon dispersion. In addition, samples of the pipe provided shall be tested for hoop tensile strength and ductility by either quick burst per ASTM D1599 or ring tensile per ASTM D2290. Molded fittings shall be subject to x-ray inspection for voids, and tests for knit line strength. All fabricated fittings shall be inspected for fusion quality and alignment.

E. The pipe and fitting manufacturer shall maintain permanent QC and QA records.

F. If manufacturer's test data is inadequate or unavailable, then OWNER reserves right to reject or require additional tests to satisfy material requirements. The cost of these tests shall be borne by CONTRACTOR.

G. Work shall comply with codes and standards of the Plastic Pipe Institute (PPI).

1.4 DELIVERY, STORAGE, AND HANDLING

A. The pipe and fitting manufacturer shall package products for shipment in a manner suitable for safe transport by commercial carrier. When delivered, a receiving inspection shall be performed by CONTRACTOR, and any shipping damage reported to the pipe and fittings manufacturer. Pipe and fittings shall be handled, installed, and tested in accordance with manufacturer’s recommendations, and the requirements of this Section.

B. Pipe Storage
   1. Store or stack pipe to prevent damage from marring, crushing or puncture. Limit maximum stacking height to 6 feet or manufacturer’s recommended maximum height, whichever is less.
   2. Store in accordance with manufacturer’s recommendations.
C. Pipe Handling
1. Protect pipe from excessive heat or harmful chemicals.
2. Handle pipe and use equipment needed to avoid gouging of the pipe surfaces.

PART 2 – PRODUCTS

2.1 PHYSICAL PROPERTIES

A. Materials used for the manufacture of HDPE pipe and fittings shall meet the following physical property requirements:

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Test Procedure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Designation</td>
<td>-</td>
<td>PPI/ASTM</td>
<td>PE 3400</td>
</tr>
<tr>
<td>Material Classification</td>
<td>-</td>
<td>ASTM D1248</td>
<td>III C 5 P34</td>
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<tr>
<td>Cell Classification</td>
<td>-</td>
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<tr>
<td>Density</td>
<td>g/cm³</td>
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<td>Melt Index</td>
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<tr>
<td>Flexural Modulus</td>
<td>psi</td>
<td>ASTM D790</td>
<td>110,000 to &lt;160,000</td>
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<tr>
<td>Tensile Strength at yield</td>
<td>psi</td>
<td>ASTM D638</td>
<td>3,000 to &lt;3,500</td>
</tr>
<tr>
<td>Slow Crack Resistance (PENT)</td>
<td>hours</td>
<td>ASTM F1473</td>
<td>&gt;100</td>
</tr>
<tr>
<td>HDB</td>
<td>psi</td>
<td>ASTM D2837</td>
<td>1,600 @ 23°C</td>
</tr>
<tr>
<td>UV Stabilizer</td>
<td>% Carbon Black</td>
<td>ASTM D1603</td>
<td>2 to 3</td>
</tr>
<tr>
<td>Elastic Modulus</td>
<td>psi</td>
<td>ASTM D638</td>
<td>110,000</td>
</tr>
<tr>
<td>Brittleness Temperature</td>
<td>°F</td>
<td>ASTM D746</td>
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<tr>
<td>Vicat Softening</td>
<td>°F</td>
<td>ASTM D1525</td>
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<tr>
<td>Temperature</td>
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<tr>
<td>Thermal Expansion</td>
<td>in/in/°F</td>
<td>ASTM D696</td>
<td>1 x 10⁻⁴</td>
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<tr>
<td>Hardness</td>
<td>Shore D</td>
<td>ASTM D2240</td>
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B. There shall be no evidence of splitting, cracking, or breaking when the pipe is tested.

C. Ring Stiffness Constant (RSC) values for the pipe shall be 90 percent of the nominal.

D. The pipe and fittings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density, and other physical properties.
E. Clean rework or recycled material generated by the manufacturer’s own production may be used so long as the pipe or fittings produced meet all the requirements of this Section.

2.2 PIPE AND FITTINGS

A. Dimensions
   1. The nominal inside diameter of the pipe shall be true to the specified pipe size in accordance with ASTM D2513. Standard laying lengths shall be 40 feet + 2 inches.
   2. Fittings such as couplings, wyes, tees, adaptors, etc. for use in laying pipe shall have standard dimensions that conform to ASTM D2513.
   3. Pipe and fittings shall have the Standard Dimension Ratio (SDR) rating indicated on the Drawings.

B. Pipe and fittings shall be produced by the same manufacturer from identical materials meeting the requirements of this Section. Special or custom fittings may be exempted from this requirement.

C. Pipe and fittings shall be pressure rated to meet the service pressure requirements specified. Whether molded or fabricated, fittings shall be fully pressure rated to at least the same service pressure rating as the joining pipe.

D. Molded fittings shall meet the requirements of ASTM D3261 and this Specification. At the point of fusion, the outside diameter and minimum wall thickness of fitting butt fusion outlets shall meet the diameter and wall thickness specifications of the mating system pipe. Fitting markings shall include a production code from which the location and date of manufacture can be determined. Upon request, the manufacturer shall provide an explanation of his production code.

E. Perforated pipe shall meet the same physical properties and requirements of standard solid pipe. Hole spacing and orientation are presented on the Drawing. Sections of perforated pipe shall be fused together with perforations aligned between each section of pipe.

F. Marking
   1. Each standard and random length of pipe and fitting in compliance with this standard shall be clearly marked with the following information:
      a. Manufacturer’s Name or Trademark;
      b. ASTM Standard Designation;
      c. Nominal Pipe Size;
      d. Class & Profile Number;
e. Production Code, including Extrusion Date, and Lot or Batch Number; and
f. SDR.

2.3 SOURCE QUALITY CONTROL

A. The pipe and fitting manufacturer shall certify that samples of his production pipe have undergone stress regression testing, evaluation, and validation in accordance with ASTM D2837 and PPI TR-3. Under these procedures, the minimum hydrostatic design basis shall be certified by the pipe and fitting manufacturer to be 1600 psi at 73.4°F and 800 psi at 140°F.

B. Material shall be listed in the name of the pipe and fitting manufacturer by the Plastics Pipe Institute (PPI) in PPI TR-4 with the following Standard Grade ratings:

<table>
<thead>
<tr>
<th></th>
<th>73.4°F</th>
<th>140°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrostatic Design Basis (HDB)</td>
<td>1600 psi</td>
<td>800 psi</td>
</tr>
<tr>
<td>Hydrostatic Design Stress (HDS)</td>
<td>800 psi</td>
<td>400 psi</td>
</tr>
</tbody>
</table>

C. PPI material listing in the name of the resin supplier is not acceptable in meeting this requirement.

D. As the basis of the acceptance of the material, the manufacturer will furnish a certificate of conformance of these Specifications upon request. When prior agreement is being made in writing between the purchaser and the manufacturer, the manufacturer will furnish other conformance certification in the form of affidavit of conformance, test results, or copies of test reports.

E. Physical Test Requirements
1. Sampling: The selection of the sample of pipe shall be as agreed upon by the purchaser and the manufacturer. In case of no prior agreement, any sample selected by the manufacturer shall be deemed adequate.
2. Sample size for flattening test will be one sample per size and class of pipe per project.
3. Conditioning: Conditioning of samples prior to and during test shall be as agreed upon by the purchaser and manufacturer. In case of no prior agreement, the conditioning procedure used by the manufacturer shall be deemed adequate.

F. Test Methods (to be completed by Manufacturer)
1. Flattening: Three specimens of pipe, a minimum of 12 inches long, shall be flattened between parallel plates in a suitable press until the distance between the plates is 40 percent of the outside diameter of the pipe. The rate of loading shall be uniform and such that the compression is
completed within 2 to 5 minutes. Remove the load, and examine the specimens for splitting cracking or breaking.

2. Pipe Ring Stiffness Constant: The pipe ring stiffness constant shall be determined using procedures similar to those outlined in ASTM D2412. The stiffness of HDPE pipe is defined in terms of the load, applied between parallel plates, which causes 1 percent reduction of pipe diameter. Test specimens shall be a minimum of two pipe diameters or 4 feet in length, whichever is less.

2.4 GASKETS AND HARDWARE

A. All gaskets shall be ⅛-inch thick, full face Viton with a Shore A durometer rating between 60 and 80.

B. Below-grade joint hardware shall be Type 304 stainless steel.

C. Above-grade joint hardware shall be zinc-plated steel unless otherwise noted.

D. Hot-dipped galvanized fasteners are not allowed.

2.5 FITTINGS

A. Fittings shall be manufactured from polyethylene compound having cell classification equal to or exceeding compound used in pipe to ensure compatibility of polyethylene resins.

B. Provide factory-fabricated, dual containment fittings except as indicated below.

C. Fittings shall be from same manufacturer as pipe being provided. OWNER may allow substitution for approved material with use of flanged joint sections.

D. Dimensions of fittings conforming to standard dimensions and tolerances in accordance with ASTM F2206.

E. Fittings shall have the same or higher pressure rating as pipe.

F. Markings
1. Manufacturer's name or trademark
2. Nominal size
3. Type of plastic pipe (i.e., PE 3408)
4. Standard dimension ratio
5. Extrusion date, lot number or batch number
G. The Drawings do not show all fittings that may be required. CONTRACTOR to provide all fittings required for a complete installation.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

A. Pipe may be rejected for failure to conform to any of the following:
   1. Fractures or cracks passing through pipe wall, except single crack not exceeding 2 inches in length at either end of pipe which could be cut off and discarded. Pipes within one shipment shall be rejected if defects exist in more than 5 percent of shipment or delivery.
   2. Cracks sufficient to impair strength, durability or serviceability of pipe.
   3. Defects indicating improper proportioning, mixing, and molding.
   4. Damaged ends, where such damage prevents making satisfactory joint.
   5. Damage due to handling or installation. Scratches and gouges exceeding five (5) percent of the wall thickness shall be considered excessive, and may be rejected by OWNER or the CQA Consultant.

B. Acceptance of fittings, stubs or other specifically fabricated pipe sections shall be based on visual inspection at job site and documentation of conformance to this Section.

C. Prior to backfilling, CONTRACTOR shall obtain as-built survey information (location and elevation) for the installed pipe at 50-foot intervals, any changes in grade, and the location of all installed fittings.

3.2 INSTALLATION

A. Trench, backfill, and compact in accordance with Specification Section 02200.

B. Heat Fusion of Pipe
   1. Weld in accordance with manufacturer's recommendation for butt fusion methods. The pipe manufacturer shall certify fusion operators.
   2. Butt fusion equipment for joining procedures shall be capable of meeting conditions recommended by pipe manufacturer including, but not limited to, temperature requirements, alignment, and fusion pressures.
   3. For cleaning pipe ends, solutions such as detergents and solvents, when required, shall be used in accordance with manufacturer's recommendations.
   4. Do not bend pipe to greater degree than minimum radius recommended by manufacturer for type and grade.
5. Do not subject pipe to strains that will overstress or buckle piping or impose excessive stress on joints.

6. Branch saddle fusions shall be joined in accordance with manufacturer's recommendations and procedures. Branch saddle fusion equipment shall be of a size to facilitate saddle fusion within the trench.

7. Before butt fusing pipe, inspect each length for presence of dirt, sand, mud, shavings, and other debris or animals. Remove debris from pipe.

8. **Cover open ends of fused pipe at end of each working day. Cap to prevent entry by animals or debris.**

9. Use compatible fusion techniques when PEs of different melt indexes are fused together. Refer to manufacturer's specifications for compatible fusion.

10. Fusion welding shall not be performed when pipe ends are exposed to precipitation. CONTRACTOR shall provide temporary welding shelter if necessary.

11. All HDPE cuttings from pipe facing and drilling shall be removed from the pipe network by CONTRACTOR prior to turning the Project over to OWNER. CONTRACTOR shall clean the entire pipe network associated with the Project if HDPE cuttings are encountered in the pipe network by OWNER following completion of the project.

12. **All interior butt-fusion weld beads shall be removed from the pipe (i.e., all HDPE pipe must be de-beaded) in accordance with the manufacturer's recommendations.**

C. Flange Jointing

1. Use on flanged pipe connection sections.

2. Convoluted stainless steel backup rings shall be used for joining HDPE pipes below grade, and epoxy-coated carbon steel backup flanges shall be used above grade.

3. Butt fuse fabricated flange adapters to pipe.

4. Observe the following precautions in connection of flange joints.
   a. Use full-face Viton gaskets only.
   b. All fasteners shall be Type 304 stainless steel below grade, and zinc-plated steel above grade. Do not use hot-dipped galvanized fasteners.
   b. Align flanges or flange/valve connections to provide tight seal. Require nitrile-butadiene gaskets if needed to achieve seal. Gaskets are required for flange/valve connections. Flange adapters may require modification or special adapters when used against butterfly valves to provide clearance for cisc to open fully.
   c. U.S. Standard round washers as may be required on some flanges in accordance with manufacturer's recommendations. Bolts shall be lubricated in accordance with manufacturer's recommendations.
d. Tighten flange bolts using a torque wrench in sequence and accordance with manufacturer's recommendations. CAUTION: Do not over-torque bolts. CONTRACTOR shall use a torque wrench to tighten all flange fasteners.

5. Pull bolts down by degrees to uniform torque in accordance with manufacturer's recommendation.

6. Protect below grade bolts and flanges by covering with a 6-mil thick PE wrap. Duct tape wrap to HDPE pipe.

7. Electrofusion couplers, where used, shall be installed per manufacturer's specifications. The outside diameter of the HDPE pipe and face shall be prepared in accordance with manufacturer's recommendations prior to installing the coupler.

D. Pipe Placement

1. Grade control equipment shall be of type to accurately maintain design grades and slopes during installation of pipe.

2. Remove all standing water in trench before pipe installation.

3. Unless otherwise specifically stated, install pipe in accordance with manufacturer's recommendations.

4. Maximum lengths of fused pipe to be handled as one section shall not exceed 400 feet and shall be placed according to manufacturer's recommendations as to pipe size, pipe SDR, and topography so as not to cause excessive gouging or surface abrasion. Pipe wall gouges deeper than 3/16-inch shall be cause for rejection of the pipe.

5. Cap pipe sections longer than single joining (usually 40 feet) on both ends during placement except during fusing operations.

6. Remove dirt or debris from inside of pipe before backfilling.

7. Notify ENGINEER prior to installing pipe into trench and allow time for ENGINEER's inspection.

8. Correct irregularities found during inspection.

9. Complete connections within trench whenever possible to prevent overstressed connections.

10. Allow pipe sufficient time to adjust to trench temperature prior to testing, segment tie-ins, or backfilling activity.

11. Install reducers adjacent to laterals and tees.

12. To reduce branch saddle stress, install saddles at slope equal to and continuous with lateral piping.

13. Place in trench by allowing minimum 12 inches/100 feet for thermal contraction and expansion.

13. Coordinate construction of pipes near/in access roads with OWNER to limit impediment of OWNER's operations or operations of other contractors.
3.3 PIPE TESTING

A. General

1. The Contractor shall perform hydrostatic pressure tests after placement in trench, in accordance with these specifications.
2. The total test time, including initial pressurization, initial expansion, and time at test pressure shall not exceed eight hours. If the test is not completed in eight hours, the pressure in the test section shall be released and the section allowed to “relax” for at least eight hours before initiating another test.
3. Pipe lines shall be pressure tested in presence of the CQA Consultant. CONTRACTOR to provide ENGINEER with a minimum of 7 days’ notice before performing the test.
4. Provide necessary connections between section of pipe being tested and nearest available source of water or air supply, together with test pressure equipment, meters, pressure gauge, other equipment, materials and facilities necessary to make specified tests.
5. Owner will provide a source of water for testing.
6. Provide bulkheads, flanges, valves, bracing, blocking, or other temporary sectionalizing devices as required to perform the tests safely.
7. Pipe to be tested shall be exposed in the trench, except that bends, reduced pressure rated fittings and components should be buried or restrained. Flange connections shall be visible to check for leaks.
8. Contractor shall notify on-site personnel of the testing schedule, and only allow personnel required to perform the test in the test area for the duration of the test.
9. Contractor shall provide a system without leaks.

B. Test all non-perforated HDPE leachate force main pipe and fittings. Test all PVC pipe in the Sump Riser Building, installed in accordance with specification section 15212 and 15310, using this procedure as well.

C. Preparation

1. Remove or isolate valves, flow meters, and instruments that may not withstand the required test pressure from within the test sections. Reconnect pipes with temporary fittings. Vent isolated equipment.
2. Flush pipe with clean water until pipe section to be tested is clean and free of dirt, sand, pipe shavings, or other foreign material.
3. Plug pipe outlets with test plugs, blind flanges or other devices suitable for the test pressure. Brace securely to prevent blowouts. Verify test pressure does not exceed any component of the pipe system.
4. Restrain or remove expansion joints.
5. Pressurizing equipment shall include a pressure regulator, set to avoid over-pressurizing and damaging otherwise acceptable pipe.
D. Hydrostatic Pressure Testing
1. Contractor shall use a hydrostatic test pump specifically designed for performing hydrostatic pressure tests on pipe.
2. Clean potable water shall be used as the testing medium to fill the pipes.
3. Pipe shall be tested at 1.5 times the rated working pressure of the pipe or the lowest rated pressure of any component of the system being tested. In no case exceed maximum allowable pressure for any pipeline component, including valves, fittings, and instruments.
4. Apply test pressure slowly, and once the test pressure has been reached, allow the pressure to stabilize, without adding additional pressure. This may take 2 to 3 hours.
5. Once pressure has stabilized, add additional water to achieve the test pressure and begin the test.
6. After 1 hour, additional water shall be added to return to the test pressure. If the volume of water required to achieve the test pressure after 1 hour is less than shown in the table, then the pipe has passed the pressure test.
7. The total test time, including the initial pressurization, initial expansion and time at test pressure, shall not exceed eight hours. If the test is not completed within that time, the test pressure shall be removed for at least eight hours, prior to performing the test again.
8. If pressure test is not accepted, correct leaks or defects in the pipe and retest.
9. Remove temporary sectionalizing devices after tests are complete.

E. Pnematic Testing

WARNING: Compressed air or any pressurized gas used as a test medium may present severe hazards to personnel in the vicinity of pipelines being tested. Personnel protection precautions must be observed when a gas under pressure is used as the test medium.

WARNING: Explosive Failure. Pipe system rupture during pneumatic pressure tests may result in explosive, uncontrolled movement of system pipe, or components, or parts of components. Keep personnel a safe distance away from the test section during testing.

1. The test period at the test pressure shall last no more than 10 minutes.
2. Provide all necessary connections, bulkheads, flanges, bracing, and blocking, as well as all required test equipment.
3. Test pressure gauge shall have a maximum range of no more than 20 psig, with minor gradations no greater than 0.1 psig.
4. Pipe to be tested shall be exposed in the trench, except bends, reduced pressure rated fittings and components, which shall be buried or restrained. Flange connections shall be visible to check for leaks.

5. Test pressure shall be 10 psig.

6. Test shall be accepted if the pressure drop over 10 minutes is less than 5 percent of the pressure at the beginning of the test period.

F. Test Report

1. Pressure testing shall be documented using one of the test logs provided as Attachment 1 and 2 to this Specification depending on the test method utilized by the CONTRACTOR.

2. CQA Consultant shall record the following information for each test.
   a. Date of test.
   b. Description and identification of piping system tested.
   c. Type of test performed.
   d. Test fluid.
   e. Test pressure.
   f. Results of test.
   g. Type and location of leaks detected.
   h. Corrective action taken to repair leaks.
   i. Results of retesting.
   j. Name of person performing test.

[END OF SECTION 15210]
ATTACHMENT 1 TO SECTION 15210
HYDROSTATIC PIPE PRESSURE TEST LOG

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<thead>
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<th>Project No.:</th>
<th>Test No.</th>
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<tr>
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<tr>
<th>Sanborn Head Personnel:</th>
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<table>
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<table>
<thead>
<tr>
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<table>
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<th>Location/designation of pipe tested:</th>
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<th>Time (hours)</th>
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<th>P_{e} Pressure Drop (%)</th>
<th>Amount of Make-Up Water Added (gal.)</th>
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<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pass | Fail | Retest? | Yes | No |
|-----|------|---------|-----|----|

Description/location of defects for failed test:

Test Procedure:
1. Pressurize to 150 percent of rated pressure;
2. Add make-up water each hour for three hours to maintain pressure;
3. Test phase begins after the initial three-hour phase;
4. After one, two or three hours add a measured amount of makeup water to return to the test pressure; and
5. The amount of makeup water added to return to the test pressure must not exceed the amount in the makeup water test values table on the back of this sheet.

Comments:

Signature:
## Maximum Allowable Make-Up Water Volume

<table>
<thead>
<tr>
<th>Nominal Pipe Size (inches)</th>
<th>Make-Up Water Allowance (U.S. Gallons per 100 ft. of Pipe)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Hour Test</td>
</tr>
<tr>
<td>1-1/4</td>
<td>0.06</td>
</tr>
<tr>
<td>1-1/2</td>
<td>0.07</td>
</tr>
<tr>
<td>2</td>
<td>0.07</td>
</tr>
<tr>
<td>3</td>
<td>0.10</td>
</tr>
<tr>
<td>4</td>
<td>0.13</td>
</tr>
<tr>
<td>5</td>
<td>0.19</td>
</tr>
<tr>
<td>5-3/8</td>
<td>0.21</td>
</tr>
<tr>
<td>6</td>
<td>0.3</td>
</tr>
<tr>
<td>7-1/8</td>
<td>0.4</td>
</tr>
<tr>
<td>8</td>
<td>0.5</td>
</tr>
<tr>
<td>10</td>
<td>0.8</td>
</tr>
<tr>
<td>12</td>
<td>1.1</td>
</tr>
<tr>
<td>13-3/8</td>
<td>1.2</td>
</tr>
<tr>
<td>14</td>
<td>1.4</td>
</tr>
<tr>
<td>16</td>
<td>1.7</td>
</tr>
<tr>
<td>18</td>
<td>2.0</td>
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<tr>
<td>20</td>
<td>2.8</td>
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<td>22</td>
<td>3.5</td>
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<td>24</td>
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<td>26</td>
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<tr>
<td>28</td>
<td>5.5</td>
</tr>
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<td>30</td>
<td>6.3</td>
</tr>
<tr>
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<td>7.0</td>
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<td>34</td>
<td>8.0</td>
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<td>36</td>
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<tr>
<td>42</td>
<td>12.0</td>
</tr>
<tr>
<td>48</td>
<td>15.0</td>
</tr>
<tr>
<td>54</td>
<td>18.5</td>
</tr>
</tbody>
</table>
### ATTACHMENT 2 TO SECTION 15210
**PIPE PRESSURE AIR TEST LOG**

#### SANBORN **HEAD**

<table>
<thead>
<tr>
<th>Project No.:</th>
<th>Test No.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name:</td>
<td>Person/Company Performing the Test</td>
</tr>
<tr>
<td>Project Location:</td>
<td>Time of Test:</td>
</tr>
<tr>
<td>Weather:</td>
<td>Finish:</td>
</tr>
</tbody>
</table>

**Contractor:**

**SHA Personnel:**

**Date of Test:**

**Pipe Length:** ~ ft.  **Pipe Diameter:** in.

**Pipe Material:**

**Pipe SDR/Sch.:**

**Rated Working Pressure:**

**Test Pressure:** psi

### Location/designation of pipe tested:

<table>
<thead>
<tr>
<th>t</th>
<th>Time (min.)</th>
<th>T</th>
<th>Pipe Temperature (°C)</th>
<th>P&lt;sub&gt;t&lt;/sub&gt;</th>
<th>Pressure Gauge Reading (psig)</th>
<th>P&lt;sub&gt;c&lt;/sub&gt;</th>
<th>Pressure Drop (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>5</td>
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<td>10</td>
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<td>30</td>
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<tr>
<td></td>
<td>60</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pass**

**Fail**

**Retest?** Yes  **No**

### Description of leaks and repairs of retested pipe segments:

### Comments:

**Signature:**

\[ P_c = \text{Percent Pressure Drop} = \frac{P_o - P_t}{P_o} \times 100 \]

\[ P_o = \text{Initial Pressure Gauge Reading} \]

\[ P_t = \text{Pressure Gauge Reading at Time } t \]
January 17, 2019

INVITATION FOR BIDS

Phase III Landfill Expansion

IFB0593-022019

The City of Nashua, Division of Public Works, is seeking sealed bids for the work as set forth in the attached plans and specifications for construction of the Phase III lined expansion landfill at the Four Hills Landfill, 840 West Hollis Street, in Nashua, New Hampshire. The scheduled work includes but is not limited to, site preparation, landfill liner base grade preparation, installing a double High Density Polyethylene (HDPE) plastic liner system, installing leachate collection and removal piping, pumps and appurtenances, and constructing storm water control infrastructure.

Please note that as of the date of this Invitation for Bid, groundwater data needed to provide a groundwater separation demonstration associated with the proposed landfill base grades is not complete. NHDES has required the City to continue collecting data through June 2019 in order to determine that the groundwater separation is adequate for liner installation. A final approval of the landfill base grades from NHDES is expected 30 days after submission of all required groundwater data. NHDES has specified that no work associated with liner system installation, including the 6-inch Screened Till layer, can begin until they have granted approval. All other work not associated with the liner system installation can commence after the contract has been executed.

"Notice to Proceed", is anticipated to be issued in the April of 2019. Completion time for the project will be calculated, in calendar days, from the date of the issuance of the "Notice to Proceed", as follows:

| 150 calendar days | for substantial completion |
| 180 calendar days | for contract completion |

Liquidated damages will be in the amount of $500.00 for each calendar day of delay from the date established for substantial completion, and $500.00 for each calendar day of delay from the date established for contract completion.

IFB0593-022019 Phase III Landfill Expansion

229 Main Street • Nashua, New Hampshire 03060 • Phone (603) 589-3307 • Fax (603) 594-3434
The City is now accepting submittals electronically via Bid Express. Please review the
attachments, *Bid Express Vendor Guide and Vendor Set-up Guide for more information*. If a
Bidder chooses to submit a paper copy, the bid must be submitted on the bid form, in its entirety,
in triplicate (one (1) original and two (2) copies) in a sealed envelope plainly marked
*"IFB0593-022019 Phase III Landfill Expansion"* and must be received at Central Purchasing,
229 Main Street, Room128, Nashua, New Hampshire 03061 prior to 3:00PM, Wednesday,
February 20, 2019. Postmarks or other time stamps will not be accepted in lieu of actual
delivery. The contractor can use whatever delivery mechanism it chooses as long as it remains
clear that the contractor is responsible for submissions prior to the date and time. Further
details are available on the City’s web site, [www.nashuanh.gov](http://www.nashuanh.gov), under Services; Bid Opportunities;
Current Bids; *IFB0593-022019*. Bids will be opened in public on the due date and time. Results
of the bid opening will be posted on the City’s web-site, under Services; Bid Opportunities;
Current Bids; within twenty-four (24) hours of the opening.

Contract approval will be contingent on approval by the Board of Public Works, and the
Aldermanic Finance Committee.

**Beginning Thursday, January 17, 2018**, bid documents will be available electronically from
the City of Nashua website: [www.nashuanh.gov](http://www.nashuanh.gov), under Services, Bid Opportunities; Current
Bids; (Refer to Document *IFB0593-022019*).

*Please note paper copies will not be available.*

**No bid documents are available at the Central Purchasing Office.**

Bids must be submitted in the format provided and address the items specified in the bid
package.

Delivery of the Bids shall be at the Vendor’s expense. The time of receipt shall be considered
when a Bid has been officially documented by the Department, in accordance with its established
policies, as having been received at the location designated above. The City of Nashua accepts
no responsibility for mislabeled mail. Any and all damage that may occur due to shipping shall
be the Vendor’s responsibility.

The City of Nashua assumes no liability for the payment of costs and expenses incurred by any
bidder in responding to this request for bids. All bids become the sole property of the City of
Nashua. This request for bids is not a contract and alone shall not be interpreted as such but
rather serves as an instrument through which bids are solicited.

The City of Nashua may reject any or all of the bids on any basis and without disclosure of a
reason. The failure to make such a disclosure shall not result in accrual of any right, claim or
cause of action by any unsuccessful bidder against the City of Nashua. The City reserves the
right to waive any irregularities when the public interest will be served thereby. The City also
reserves the right to negotiate any change or amendment in any bid without soliciting further
bids if the action is necessary for the best interest of the City. A bid that is abnormally high or
low for any bid item, or as a whole, may be rejected as unbalanced.

All bids are binding for ninety (90) days following the deadline for bids, or until the effective
date of any resulting contract, whichever is later.
To be eligible for award, a bidder must be deemed “responsible”. A responsible bidder 1) has the ability, capacity and skill to provide the goods or services required; 2) can provide the goods or services within the time frame specified; 3) has a satisfactory record of integrity, reputation, judgment and experience; 4) has sufficient financial resources to provide the goods or services; 5) has an ability to provide future maintenance and support as required; and 6) has developed a positive track record with the City of Nashua to the extent the bidder has previously provided goods or services.

A sample contract is included with the Bid Specifications.

The project timeline is as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory Pre-Bid Conference</td>
<td>Wednesday, January 23, 2019</td>
<td>10:00 am Four Hills Landfill, 840 West Hollis Street Nashua, NH 03062</td>
</tr>
<tr>
<td>Deadline for Vendor Questions</td>
<td>Monday, January 28, 2019</td>
<td>12:00 Noon</td>
</tr>
<tr>
<td>Answers/Clarifications Posted</td>
<td>Wednesday, January 30, 2019</td>
<td>3:00 pm</td>
</tr>
<tr>
<td>Bid Submittal Date</td>
<td>Wednesday, February 20, 2019</td>
<td>3:00 pm</td>
</tr>
<tr>
<td>Bid Award</td>
<td>Anticipated to be April 2019</td>
<td></td>
</tr>
</tbody>
</table>

A MANATORY Pre-Bid Conference will be held at 10:00 am, Wednesday, January 23, 2019 at the Four Hills Landfill, located at 840 West Hollis Street, in Nashua, New Hampshire. You or your representative(s) are required to attend this meeting if you intend to submit a bid. The meeting is an opportunity for the City of Nashua to overview the project and objectives, and participants to request additional information directly from City of Nashua staff managing or participating in the project.

Vendors are encouraged to submit questions via e-mail; however, the City assumes no liability for assuring accurate and complete email transmission/receipt and is not responsible to acknowledge receipt. Inquiries must be submitted in writing, citing the IFB title, IFB number, Page, Section, and received no later than Monday, January 28, 2019 at 12:00 Noon to:

Mr. Kerry Converse  
City of Nashua  
Solid Waste Department  
840 West Hollis Street  
Nashua, NH 03062  
Email: conversek@nashuanh.gov

IFB0593-022019 Phase III Landfill Expansion
The City will consider all timely-received questions and requests for change and, if reasonable and appropriate, will issue an addendum to clarify or modify this IFB. Answers to Vendor submitted questions and other addenda will be posted under document IFB0593-022019 on the City of Nashua website; www.nashuanh.gov under Services; Bid Opportunities; Current Bids; no later than Wednesday, January 30, 2019, at 3:00 pm.

The Successful Bidder must maintain the following lines of coverage and policy limits for the duration of the contract. Any subcontractors used by the contractor are subject to the same coverage and limits and is a subcontractor to the CONTRACTOR and not the OWNER. It is the responsibility of the CONTRACTOR to update Certificates of Insurance during the term of the contract.

The City of Nashua must be named as Additional Insured.

Provide coverage for not less than the following amounts or greater:

- **General Liability:**
  - $1,000,000 per Occurrence
  - $2,000,000 Aggregate

- **Motor Vehicle Liability:**
  - $1,000,000 Combined Single Limit
  - Coverage must include all owned, non-owned and hired vehicles.

- **Workers’ Compensation** Coverage according to Statute of the State of New Hampshire:
  - $100,000/$500,000/$100,000

All bidders and subcontractors at every tier under the bidder will fully comply with NH RSA 281-A, “Workers’ Compensation”. It is the responsibility of the CONTRACTOR to submit to the OWNER certificates of insurance for all other subcontractors prior to the start of the project. It is the responsibility of the CONTRACTOR to provide the OWNER with updated certificates of insurance for the CONTRACTOR and all subcontractors 10 days prior to the expiration of coverage. The OWNER may, at any time, order the CONTRACTOR to stop work, suspend the contract or terminate the contract for non-compliance. All subcontractors are subject to the same insurance requirements as the CONTRACTOR.

The successful bidder will be required to post a 100% Performance Bond and 100% Payment Bond in the amount equal to the Contract Award.

The successful bidder shall submit a project specific health and safety plan that conforms to all applicable OSHA requirements. This plan shall be adhered to by contractor’s employees while on site and during performance of the specified work.

The City is exempt of all taxes. All bids must be FOB Nashua, NH. All bidders must comply with all applicable Equal Employment Opportunity laws and regulations.
Pursuant to NRO 5-71 (A), the City of Nashua supports the concept of purchasing products which are biodegradable, can be or have been recycled, or are environmentally sound. Due consideration will be given to the purchase of such products. If you are bidding on any such products which qualify, please so indicate in a cover sheet by item number and description.

Pursuant to NRO 5-78 (F), the purchasing manager shall not solicit a bid from a contractor who is in default on the payment of taxes, licenses or other monies due the city. Therefore, this request is void as to anyone who is in default on said payments.

Respectfully,
DIVISION 2

INSTRUCTIONS FOR BIDDERS
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INSTRUCTIONS FOR BIDDERS

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INSTRUCTIONS FOR BIDDERS

ARTICLE 1   DEFINED TERMS

1.01   Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof:

A.  *Bidder* – The individual or entity who submits a Bid directly to OWNER.

B.  *Issuing Office* – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

C.  *Successful Bidder* – The lowest responsible Bidder submitting a responsive Bid to whom OWNER (on the basis of OWNER’s evaluation as hereinafter provided) makes an award.

ARTICLE 2   COPIES OF BIDDING DOCUMENTS

2.01   Bidding Documents are available electronically City’s web site, www.nashuanh.gov, under Services; Bid Opportunities; Current Bids. Hard copies are not available.

2.02   Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER nor ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

ARTICLE 3   QUALIFICATIONS OF BIDDERS

3.01   To demonstrate Bidder’s qualifications to perform the Work, each Bidder must submit a completed Construction Contractor’s Qualification for Engineered Projects.

ARTICLE 4   MANDATORY PRE-BID CONFERENCE

4.01   A **MANDATORY** pre-bid conference will be held on the date and time prescribed and at the place indicated in the Advertisement or Invitation to Bid. Representatives of OWNER and ENGINEER will be present to discuss the Project. OWNER will transmit to all prospective Bidders of record such Addenda, as OWNER considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 5   SITE AND OTHER AREAS

5.01   The Site is identified in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by OWNER unless otherwise provided in the Bidding Documents.

ARTICLE 6   INTERPRETATIONS AND ADDENDA

6.01   All questions about the meaning or intent of the Bidding Documents are to be directed to ENGINEER. Interpretations or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda and posted on the City of Nashua website. Deadlines for submission of questions can be found on the project timeline contained within the Invitation for Bids. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
6.02 Addenda may also be issued to clarify, correct, or change the Bidding Documents as deemed advisable by OWNER or ENGINEER. Bidders are requested to sign each Addenda issued to indicate receipt of this additional information and must include the signed cover page with Bidders bid submittal. It is the Bidder’s responsibility to determine from the City website if Addendas have been issued.

ARTICLE 7 CONTRACT TIMES

7.01 The number of calendar days within which, or the dates by which, the Work is to be (a) substantially completed and (b) also completed and ready for final payment are set forth in the Agreement.

ARTICLE 8 LIQUIDATED DAMAGES

8.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 9 SUBCONTRACTORS, SUPPLIERS AND OTHERS

9.01 Each Bidder must submit a completed List of Subcontractors on the Form furnished with the completed Bid Form. The apparent Successful Bidder, and any other Bidder so requested, shall within seven days after the Bid opening submit to OWNER supplemental information in the form of an experience statement with the pertinent information regarding similar projects and other evidence of qualification of each Subcontractor, Supplier, person or organization if requested by OWNER or ENGINEER. IF OWNER or ENGINEER, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, OWNER may, before the Notice of Award is given request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit an acceptable substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution and OWNER may consider such price adjustment in evaluating Bids and making the contract award.

9.02 If apparent Successful Bidder declines to make any such substitution, OWNER may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which OWNER or ENGINEER makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to OWNER and ENGINEER subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Article 6.06 of the General Conditions.

9.03 CONTRACTOR shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom CONTRACTOR has reasonable objection.

ARTICLE 10 PREPARATION OF BID

10.01 The Bid Form is included with the Bidding Documents.

10.02 All blanks on the Bid Form and Bid Schedule(s) must be completed by printing in ink or typed and the Bid signed. A bid price shall be indicated for each Bid item listed therein.

10.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
10.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown below the signature.

10.05 A bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown below the signature.

10.06 A Bid by an individual shall show the Bidder’s name and official address.

10.07 A Bid by a joint venture shall be executed by each joint ventured in the manner indicated on the Bid Form. The official address of the joint venture must be shown below the signature.

10.08 All names must be typed or printed in black ink below the signatures.

10.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.

10.10 The address and telephone number for communications regarding the Bid must be shown.

10.11 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located. Bidder’s state contractor license number for the state of the Project, if any, must also be shown on the Bid Form.

ARTICLE 11 BASIS OF BID; EVALUATION OF BIDS

11.01 Unit Price

A. Bidders shall submit a Bid on a unit price or lump sum basis for each item of Work listed in the Bid schedule.

B. The total of all estimated prices will be determined as the sum of the products of the estimated quantity of each item and the unit price Bid for each item. The final quantities and Contract Price will be determined in accordance with paragraph 11.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

11.02 The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowance, if any, named in the Contract Documents as provided in paragraph 11.02 of the General Conditions.

ARTICLE 12 SUBMITTAL OF BID

12.01 The City of Nashua website provides a copy of the Bidding Documents, applicable drawings or specifications, a sample contract for execution, and a submission packet. The submission packet includes the Bid Form, the Construction Contractor’s Qualification Statement, the Bid Schedule of Values, and signed cover page of each OWNER issued Addendum. Each prospective Bidder must complete and submit all submission package documents.

12.02 A bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to Bid and shall be enclosed in an opaque sealed envelope plainly
marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to City of Nashua Purchasing Department, 229 Main Street, Room 128, Nashua, NH, 03061.

ARTICLE 13 MODIFICATION AND WITHDRAWAL OF BID

13.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

13.02 If, within twenty-four hours after Bids are opened any Bidder files a duly signed written notice with OWNER and promptly thereafter demonstrates to the reasonable satisfaction of OWNER that there was a material and substantial mistake in the preparation of its Bid, OWNER may, in its sole discretion, choose to not accept the Bid and return the same to Bidder. Thereafter, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 14 OPENING OF BIDS

14.01 Bids will be opened at the time and place indicated in the advertisement or Invitation to Bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids through posting on the City’s website.

ARTICLE 15 BIDS TO REMAIN SUBJECT TO ACCEPTANCE

15.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but OWNER may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 16 AWARD OF CONTRACT

16.01 OWNER reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced or conditional Bids. OWNER further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to be non-responsible. OWNER may also reject the Bid of any Bidder if OWNER believes that it would not be in the best interest of the Project to make an award to that Bidder. OWNER also reserves the right to waive all informalities not involving price, time or changes in the Work and to negotiate contract terms with the Successful Bidder.

16.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

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

16.04 In evaluating Bidders, OWNER will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
16.05 OWNER may conduct such investigations as OWNER deems necessary to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers individuals, or entities to perform the Work in accordance with the Contract Documents.

16.06 If the Contract is to be awarded, OWNER will award the Contract to lowest Bidder whose evaluation by OWNER indicates to OWNER that the award will be in the best interests of the Project.

**ARTICLE 17  CONTRACT SECURITY**

17.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth OWNER’s requirements as to Performance and Payment Bonds and insurance. When the Successful Bidder delivers the executed Agreement to OWNER, it must be accompanied by such Bonds.

**ARTICLE 18  SIGNING OF AGREEMENT**

18.01 When OWNER gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents, which are identified in the Agreement attached thereto. The Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER, including the Performance and Payment Bonds and the Certificate of Insurance. Within 10 days thereafter, OWNER shall deliver one fully signed counterpart to Successful Bidder with a complete set of drawings with appropriate identification.

18.02 A fully executed City of Nashua Purchase Order will accompany the fully signed counterpart to successful Bidder.

**ARTICLE 19  RETAINAGE**

19.01 The OWNER shall not retain a portion of progress payments on this contract.

**ARTICLE 20  APPEAL BY BIDDERS**

20.01 Any bidder may appeal a pending bid award prior to award by OWNER. The appellant must:

A. Submit a written protest to the OWNER’s Purchasing Manager within five (5) workdays after the bid opening.

B. Describe, in the written protest, the issues to be addresses on appeal.

C. Post, with the written protest, a bond with a surety meeting the requirements of General Condition 5.02 authorized to do business in this state or submit other security in a form approved by OWNER who will hold the bond or security until a determination is made on the appeal.

D. Post the bond or other security in the amount of 25% of the total dollar value of the appellant’s bid, up to a maximum bond or other security amount of $250,000.00.

E. Not seek any type of judicial intervention until OWNER has rendered its final decision on the protest.

20.02 OWNER will stop award actions until after the OWNER’s Purchasing Manager has responded in writing to the protest. If the appellant is not satisfied with the response, the appellant may then protest to the Board of Public Works, who will render a final decision for the OWNER. No bid
protests will be heard by the Board of Public Works unless bidder has followed the appeal process.

20.03 If an appeal is granted, the full amount of the posted bond or security will be returned to the appellant. If the appeal is denied or not upheld, a claim may be made against the bond for expenses suffered by the OWNER because of the unsuccessful appeal.

20.04 OWNER is not liable for any costs, expenses, attorney’s fees, loss of income, or other damages sustained by the appellant in a bid process.
DIVISION 3

BID FORM

BID BOND

CONTRACTOR’S QUALIFICATIONS
BID FORM

PROJECT IDENTIFICATION: Phase III Landfill Expansion

CONTRACT IDENTIFICATION AND NUMBER: IFB0593-022019

THIS BID IS SUBMITTED TO: City of Nashua
                                Central Purchasing
                                229 Main Street, City Hall
                                Room 128
                                Nashua, NH 03061-2019

1.01 The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

2.01 BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. The Bid will remain subject to acceptance for 60 days after the day of Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of OWNER.

3.01 In submitting this Bid, BIDDER represents, as set forth in the Agreement, that:

A. BIDDER has examined and carefully studied the Bidding Documents and the following Addenda, receipt of all which is hereby acknowledged.

<table>
<thead>
<tr>
<th>Addendum No.</th>
<th>Addendum Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>January 25, 2019</td>
</tr>
<tr>
<td>02</td>
<td>February 7, 2019</td>
</tr>
<tr>
<td>03</td>
<td>February 13, 2019</td>
</tr>
</tbody>
</table>

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

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

D. BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by BIDDER, and safety precautions and programs incident thereto.
E. BIDDER does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

F. BIDDER is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Bidding Documents.

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

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

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

4.01 BIDDER further represents that this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any individual or entity to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

5.01 The requirements of the New Hampshire Revised Statutes Annotated shall apply to this project. The BIDDER is responsible for compliance with all applicable statutes. The entire set of the Revised Statutes Annotated is available online at:

http://gencourt.state.nh.us/rsa/html/indexes/default.html

6.01 BIDDER will complete the Work in accordance with the Contract Documents for the following prices:

**SEE ATTACHED BID SCHEDULE**

A. Unit Prices have been computed in accordance with paragraph 11.03.B of the General Conditions.

B. BIDDER acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents.

7.01 BIDDER agrees that the Work will be substantially completed and completed and ready for final payment in accordance with paragraph 14.07.B of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
7.02 BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.

8.01 The following documents are attached to and made a condition of this Bid:

A. Bid Form; Attached
B. Bid Bond; Attached
C. A tabulation of Subcontractors, Suppliers and other individuals and entities required to be identified in this Bid; and Attached
D. Construction Contractor's Qualification Statement. Attached

9.01 Communications concerning this Bid shall be addressed to:
(Contractor's mailing address to be filled in by Bidder)

Paul Bertolino, Project Executive
Charter Contracting Company, LLC
500 Harrison Avenue, Suite 4R, Boston, MA 02118
t: 617-594-0523 | e: pbertolino@charter.us

10.01 The terms used in this Bid with initial capital letters have the meanings indicated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

Submitted by:

Name of Organization: Charter Contracting Company, LLC
Name of Individual: Robert L. Delhome
Title: Managing Member/President
Address: 500 Harrison Avenue, Suite 4R
Boston, MA 02118

Telephone: o: 857-246-6823 | m: 617-594-0523

Submitted to:

Name: City of Nashua - Central Purchasing
Address: 229 Main Street, Room 128
Nashua, New Hampshire 03061

Telephone: 603-589-3330
SUBMITTED on January 20th, 2019

If BIDDER is:

An Individual

Name (typed or printed): Not Applicable

By: _______________________________ (SEAL)

Doing business as: _______________________________

Business address: _______________________________

Phone No.: __________________ Fax No.: __________________

A Partnership

Partnership Name: Charter Contracting Company, LLC (SEAL)

Date and State of Organization

October 29, 2014 - Commonwealth of Massachusetts

Names of Current General Partners

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert L. Delhome</td>
<td>Managing Member/President</td>
</tr>
<tr>
<td>Luigi M. Schena</td>
<td>Member/Chief Operating Officer</td>
</tr>
<tr>
<td>Anthony J. Pisanelli</td>
<td>Member/Vice President Program Development</td>
</tr>
<tr>
<td>Paul Bertolino</td>
<td>Member/Project Executive</td>
</tr>
</tbody>
</table>

Type of Partnership

☐ General  ☑ Limited  ☐ Publicly Traded  ☐ Other (describe): __________________

By: ____________________________ (Signature of General Partner - attach evidence of authority to sign)

Refer to Certificate of Organization provided on following 3 pages.

Name (typed or printed): Robert L. Delhome, Managing Member/President

Business address: Charter Contracting Company, LLC

500 Harrison Avenue, Suite 4R, Boston, MA 02118

Phone No.: 857-246-6800  Fax No.: 857-246-6885
Limited Liability Company
Certificate of Organization
(General Laws Chapter 156C, Section 12)

Federal Identification No.: Applied for.

(1) The exact name of the limited liability company:
Charter Contracting Company, LLC

(2) The street address of the office in the commonwealth at which its records will be maintained:
500 Harrison Avenue, Suite 4R
Boston, MA 02118

(3) The general character of the business:
The general character of the business of the limited liability company is (i) to engage in the business of civil construction, environmental remediation, soil management and real estate development; (ii) to engage in any activities directly or indirectly related or incidental thereto; and (iii) to engage in any lawful act or activity, and to exercise any powers, permitted to limited liability companies organized under the laws of the Commonwealth of Massachusetts.

(4) Latest date of dissolution, if specified: none specified.

(5) The name and street address of the resident agent in the commonwealth:
NAME: Robert L. Delhombe
ADDRESS: 500 Harrison Avenue, Suite 4R
Boston, MA 02118

(6) The name and business address, if different from office location, of each manager, if any:
NAME: Charter Environmental, Inc.
ADDRESS: 500 Harrison Avenue, Suite 4R
Boston, MA 02118
(7) The name and business address, if different from office location, of each person in addition to manager(s) authorized to execute documents filed with the Corporations Division, and at least one person shall be named if there are no managers:

<table>
<thead>
<tr>
<th>NAME</th>
<th>ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert L. Delhome</td>
<td></td>
</tr>
<tr>
<td>Luigi M. Schena, Jr.</td>
<td></td>
</tr>
</tbody>
</table>

(8) The name and business address, if different from office location, of each person authorized to execute, acknowledge, deliver and record any recordable instrument purporting to affect an interest in real property recorded with a registry of deeds or district office of the land court:

<table>
<thead>
<tr>
<th>NAME</th>
<th>ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charter Environmental, Inc.</td>
<td></td>
</tr>
<tr>
<td>Robert L. Delhome</td>
<td></td>
</tr>
<tr>
<td>Luigi M. Schena, Jr.</td>
<td></td>
</tr>
</tbody>
</table>

(9) Additional matters:

Charter Contracting Company, LLC

Signed by (by at least one authorized signatory):

[Signature]

Luigi M. Schena, Jr., Authorized Signatory

Consent of resident agent:

Robert L. Delhome

[Signature]

resident agent of the above limited liability company, consent to my appointment as resident agent pursuant to G.L. c 156C § 12*

*or attach resident agent's consent here.
THE COMMONWEALTH OF MASSACHUSETTS

I hereby certify that, upon examination of this document, duly submitted to me, it appears that the provisions of the General Laws relative to corporations have been complied with, and I hereby approve said articles; and the filing fee having been paid, said articles are deemed to have been filed with me on:

October 29, 2014 12:37 PM

[Signature]

WILLIAM FRANCIS GALVIN

Secretary of the Commonwealth
A Corporation

Corporation Name: Not Applicable (SEAL)

Date and State of Incorporation:

List of Executive Officers

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
</table>

Type (General Business, Professional, Service, Limited Liability):

By: ________________________________

(Signature -- attach evidence of authority to sign)

Name (typed or printed): ________________________________

Title: ________________________________ (Corporate Seal)

Attest: ________________________________

(Signature of Corporate Secretary)

Business Address:

Phone No.: __________________ Fax No.: __________________

Date of Qualification to do business is __________________

A Joint Venture

Joint Venture Name: Not Applicable (SEAL)

Date and State of Organization:

Name, Address and Form of Organization of Joint Venture Partners: (Indicate managing partner by an asterisk *)

Bid Form
By: ________________________________________________

(Signature of joint ventured partner -- attach evidence of authority to sign)

Name (typed or printed): __________________________________________________________

Title: _______________________________________________________________________

Business Address: __________________________________________________________________

Phone No.: _______________________________ Fax No.: _______________________________

Address for receipt of official communications:

______________________________________________________________________________

(Each joint ventured must sign. The manner of signing for each individual, partnership and
corporation that is a party to the joint venture should be in the manner indicated above).
LIST OF SUBCONTRACTORS  
(to be submitted with bid)

The name and address of each subcontractor who will be paid at least five percent (5%) of the prime contractor's total bid shall be listed below. To be deemed a responsive bid, this form must be submitted even if no subcontractors are required to be listed. In that case, the bidder should state "None" (or similar language stating that no subcontractors need to be listed) in the space below. (Refer to General Condition 6.09.H)

<table>
<thead>
<tr>
<th>Name</th>
<th>Address of Subcontractor</th>
<th>Portion of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England Liner, 40 Westfield Drive, Plantsville, CT 06479, Supply &amp; Install Geosynthetics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action Sports, 1511 SW Mockingbird Circle, Port St. Lucie, FL 34986, Supply &amp; Install Litter Fence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RL Proulx Electrical Contractors, PO Box 487, Dracut, MA 01826, Supply &amp; Install Electrical Systems</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LIST OF SUBCONTRACTORS  
(to be submitted after bid opening)

Within two hours after the completion of the opening of the bids, the general contractors who submitted the three lowest bids must provide a list of each subcontractor who will provide labor or a portion of the work or improvement to the contractor for which the subcontractor will be paid an amount exceeding one percent (1%) of the prime contractor's bid or $50,000, whichever is greater, and the number of the license issued to the subcontractor. If a general contractor fails to submit such a list within the required time, the bid shall be deemed not responsive. To be deemed a responsive bid, this form must be submitted even if no subcontractors are required to be listed. In that case, the bidder should state “None” (or similar language stating that no subcontractors need to be listed) in the space below. (Refer to General Condition 6.09.H.)

<table>
<thead>
<tr>
<th>Subcontractor/Address</th>
<th>Dollar Value and description of work</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England Liner, 40 Westfield Drive, Plantsville, CT 06479 Supply &amp; Install Geosynthetics, $627,885</td>
<td></td>
</tr>
<tr>
<td>Action Sports, 1511 SW Mockingbird Circle, Port St. Lucie, FL 34986, Supply &amp; Install Litter Fence, $119,000</td>
<td></td>
</tr>
<tr>
<td>RL Proulx Electrical Contractors, PO Box 487, Dracut, MA 01826, Supply &amp; Install Electrical Systems, $88,44</td>
<td></td>
</tr>
</tbody>
</table>
CONSTRUCTION CONTRACTOR'S
QUALIFICATION STATEMENT

1. On Schedule A, attached, list major engineered construction projects completed by this organization in the past five (5) years. (If joint venture, list each participant’s projects separately).

2. On Schedule B, attached, list current projects under construction by this organization. (If joint venture, list each participant’s projects separately).

3. Name of Surety Company and name, address, and phone number of agent.
   Arch Insurance Company; Agent: Timothy Lyons, Driscoll Agency, 141 Longwater Drive, Suite 203, Norwell, MA 02061; t: (781) 421-2560 e: tlyons@driscollagency.com

4. Is your organization a member of a controlled group of corporations as defined in I.R.C. Sec. 1563?
   ☐ Yes  ☒ No
   If yes, show names and addresses of affiliated companies.

5. Furnish on Schedule C, attached, details of the construction experience of the principal individuals of your organization directly involved in construction operations.

6. Has your organization ever failed to complete any construction contract awarded to it?
   ☐ Yes  ☒ No
   If yes, describe circumstances and provide details on attachment.

7. Has any Corporate officer, partner, joint venture participant or proprietor ever failed to complete a construction contract awarded to him or her in their own name or when acting as a principal of another organization?
   ☐ Yes  ☒ No
   If yes, describe circumstances and provide details on attachment.

8. In the last five years, has your organization ever failed to substantially complete a project in a timely manner?
   ☐ Yes  ☒ No
   ☐ Yes  ☐ No
   If yes, describe circumstances and provide details on attachment.
9. Does your organization now have any legal suits or arbitration claims pending or outstanding against it or any officers?

☐ Yes  ☒ No

If yes, describe circumstances and provide details on attachment.

10. Has your organization had a contract partially or completely terminated for default (cause) within the past five years?

☐ Yes  ☒ No

If yes, describe circumstances and provide details on attachment.

11. List the licensed categories of work that your company normally performs with its own workforce.

For the anticipated work, Charter normally performs abatement and demolition, erosion & sediment control installation maintenance, grubbing, soil excavation & placement, fill placement below and above liner systems, drainage sand, land berms, leachate sump construction, HDPE pipe installation, foundation preparation, utility trenches, stormwater systems, riprap swales & spillways, topsoil placement, manholes and drainage structures, culverts, roadways.

12. If required, can your organization provide a bid bond for this project?

☒ Yes  ☐ No

13. What is your approximate total bonding capacity?

☐ $500,000 to $2,000,000

☒ $2,000,000 to $5,000,000

☐ $5,000,000 to $10,000,000

☒ $10,000,000 or more

Charter Contracting Company, LLC Bonding Limits

Single Project $150,000,000; Aggregate $250,000,000

14. Describe the permanent safety program you maintain within your organization. Use attachment if necessary.

Charter has a firm-wide commitment to safety. Our Safety First Culture benefits our workforce and our clients. Our safety program is focused on achieving a zero-incident work environment allowing field operations to proceed uninterrupted. We have established and maintain an exceptional safety program as evidenced by our 14 years of AGC Safety Merit awards and current 0.84 Experience Modification Rate (EMR) for the 2018-2019 policy period. A site-specific Health & Safety Plan is prepared for each project, and a Site Health & Safety Officer (SHSO) is assigned to each project. The SHSO is familiar with site-specific safety requirements on environmental and heavy civil construction projects. The SHSO is supported by an on-site Health & Safety Coordinator (CHST), our full-time Corporate Health & Safety Director, who has 30 years of experience, with 16 of those years dealing directly with construction safety program implementation and personnel training at Charter.

15. Furnish the following information with respect to an accredited banking institution familiar with your organization.

<table>
<thead>
<tr>
<th>Name of Bank</th>
<th>Citizens Bank, NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>28 State Street, 15th Floor, Boston, MA 02109</td>
</tr>
<tr>
<td>Account Manager</td>
<td>Michael D. Jones, Senior Vice President</td>
</tr>
<tr>
<td>Telephone</td>
<td>617-725-5871</td>
</tr>
</tbody>
</table>

CQ - 2 of 7
I hereby certify that the information submitted herewith, including any attachment is true to the best of my knowledge and belief.

By: Robert L. Delhome

Title: Managing Member/President

Dated: February 19, 2019
This Page Intentionally Left Blank
<table>
<thead>
<tr>
<th>Name, Location and Description of Project</th>
<th>Owner</th>
<th>Design Engineer</th>
<th>Date Completed</th>
<th>Contract Price</th>
<th>Reference/Contact &amp; Address &amp; Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sutton Brook Disposal Area Superfund Site Closure, Tewksbury, MA</td>
<td>Sutton Brook DA Performing Defendants</td>
<td>Geosyntec</td>
<td>8/31/2016</td>
<td>$20,864,442</td>
<td>Steve Poirier, PhD, PE, Senior Engineer Geosyntec Consultants 289 Great Road, Suite 202 Acton, MA 01720 t: 978-206-5785 e: <a href="mailto:spoirier@geosyntec.com">spoirier@geosyntec.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>James Campbell, PhD, PE Engineering Management, Inc. 1500 Ardmore Boulevard Pittsburgh PA 15221 t: 412-244-0917 e: <a href="mailto:jrc@e-emi.com">jrc@e-emi.com</a></td>
</tr>
<tr>
<td>Landfill 2 &amp; North Drainage Ditch Remediation Orrington, ME</td>
<td>Mallinckrodt US, LLC c/o CDM Constructors</td>
<td>CDM Constructors</td>
<td>9/12/2017</td>
<td>$2,989,129</td>
<td>Dean Carter, PE, Principal CDM Constructors 99 Industrial Way Orrington ME 04474 t: 321-436-3920 e: <a href="mailto:carterde@cdmsmith.com">carterde@cdmsmith.com</a></td>
</tr>
<tr>
<td>Solvents Recovery Service of New England (SRSNE) Superfund Site Remediation Capping and Closure Southington, CT</td>
<td>Solvents Recovery Service of New England</td>
<td>de maximis</td>
<td>10/1/2017</td>
<td>$2,879,505</td>
<td>Bruce Thompson, Project Coordina de maximis inc 200 Day Hill Road, Suite 200 Windsor CT, 06095 t: 860-298-0451 e: <a href="mailto:brucet@demaximis.com">brucet@demaximis.com</a></td>
</tr>
<tr>
<td>Name, Location and Description of Project</td>
<td>Owner</td>
<td>Design Engineer</td>
<td>Date Completed</td>
<td>Contract Price</td>
<td>Reference/Contact &amp; Address &amp; Phone</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>----------------------</td>
<td>------------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>AF&amp;F Site Remediation Colrain, MA</td>
<td>AF&amp;F</td>
<td>Sanborn Head</td>
<td>7/31/2015</td>
<td>$2,691,007</td>
<td>Jennifer Sanborn, PE Sanborn Head &amp; Associates 20 Foundry Street Concord, NH 03301 t: 603-415-6137 e: <a href="mailto:jsanborn@sanbornhead.com">jsanborn@sanbornhead.com</a></td>
</tr>
<tr>
<td>2017 Nashua Landfill Gas System Expansion, Four Hills Landfill, Nashua, NH</td>
<td>Nashua, NH</td>
<td>Sanborn Head</td>
<td>8/10/2017</td>
<td>$298,395</td>
<td>Ryan Clay, PE Sanborn Head &amp; Associates 20 Foundry Street Concord, NH 03301 t: 603-229-1900 e: <a href="mailto:rclay@sanbornhead.com">rclay@sanbornhead.com</a></td>
</tr>
<tr>
<td>Southbridge Landfill, Cell Closure CAD1 Southbridge, MA</td>
<td>Southbridge Recycling &amp; Disposal Park</td>
<td>Sanborn Head</td>
<td>10/15/2018</td>
<td>$3,054,167</td>
<td>Kelly Anderson, PE Sanborn Head &amp; Associates 1 Technology Park Drive Westford, MA 01886 t: 978-577-1047 e: <a href="mailto:kanderson@sanbornhead.com">kanderson@sanbornhead.com</a></td>
</tr>
<tr>
<td>Barre Landfill Cap Repair Barre, MA</td>
<td>Waste Management of Massachusetts Civil &amp; Environmental Consultants</td>
<td></td>
<td>8/30/2016</td>
<td>$1,533,945</td>
<td>Mike Kunce, Construction Manager Waste Management of Massachusetts 101 Fitchburg Road Westminster, MA 01473 t: 508-740-9520 e: <a href="mailto:mkunce@mw.com">mkunce@mw.com</a></td>
</tr>
<tr>
<td>Name, Location and Description of Project</td>
<td>Owner</td>
<td>Design Engineer</td>
<td>Date Completed</td>
<td>Contract Price</td>
<td>Reference/Contact &amp; Address &amp; Phone</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>--------------------------------------------</td>
<td>-----------------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Middleborough Landfill</td>
<td>Waste Management of Massachusetts</td>
<td>Civil &amp; Environmental Consultants</td>
<td>9/22/2018</td>
<td>$838,858</td>
<td>Mike Kunce, Construction Manager</td>
</tr>
<tr>
<td>Phase IIIC Baseliner Expansion</td>
<td></td>
<td></td>
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<td>Waste Management of Massachusetts</td>
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<tr>
<td>Middleborough, MA</td>
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<td></td>
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<td>101 Fitchburg Road</td>
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<td>Westminster, MA 01473</td>
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<td>t: 508-740-9520</td>
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<td></td>
<td>e: <a href="mailto:mkunce@mw.com">mkunce@mw.com</a></td>
</tr>
<tr>
<td>Crossroads Landfill</td>
<td>Waste Management of Maine</td>
<td>Geosyntec Consultants</td>
<td>10/20/18</td>
<td>$1,609,858</td>
<td>Sherwood Mckenney, District Engineer</td>
</tr>
<tr>
<td>Closure</td>
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<td>Waste Management of Maine</td>
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<tr>
<td>Norridgewock, ME</td>
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<td>357 Mercer Road</td>
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<td>Norridgewock, ME 04597</td>
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<td>t: 207-634-2714</td>
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<td>e: <a href="mailto:smckenney@wm.com">smckenney@wm.com</a></td>
</tr>
</tbody>
</table>
# Schedule A – List of Major Engineered Construction Projects Completed in the Past Five (5) Years

<table>
<thead>
<tr>
<th>Name, Location and Description of Project</th>
<th>Owner</th>
<th>Design Engineer</th>
<th>Date Completed</th>
<th>Contract Price</th>
<th>Reference/Contact &amp; Address &amp; Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glenview Landfill Operation, Capping &amp; Closure, Chelmsford, MA</td>
<td>Sandbanks, LLC</td>
<td>Langdon Environmental</td>
<td>12/22/2016</td>
<td>$16,190,143</td>
<td>Bruce Haskell, Principal Langdon Environmental, LLC 25 East Main Street Southborough, MA 01772 t: 508-630-0351 e: <a href="mailto:bhaskell@langdonenv.com">bhaskell@langdonenv.com</a></td>
</tr>
<tr>
<td>Liberty Hill Soil Removal, Gilford, NH</td>
<td>Liberty Utilities</td>
<td>GEI</td>
<td>4/30/2016</td>
<td>$5,441,495</td>
<td>Mary Casey, Project Manager Liberty Utilities 15 Buttrick Road Londonderry, NH 03053 t: 603-216-3525 e: <a href="mailto:mary.casey@libertyutilities.com">mary.casey@libertyutilities.com</a></td>
</tr>
<tr>
<td>Boston Convention &amp; Exhibition Center Phase 2 South Lot Remediation, Boston, MA</td>
<td>Massachusetts Convention Center Authority</td>
<td>Haley &amp; Aldrich</td>
<td>8/1/2017</td>
<td>$7,760,661</td>
<td>John Donahue, Chief of Operations a Capital Projects Massachusetts Convention Center Authority 415 Summer Street, Boston, MA 022 t: 617-954-2042 e: <a href="mailto:jdonahue@signatureboston.com">jdonahue@signatureboston.com</a></td>
</tr>
</tbody>
</table>
## Schedule B – List of Current Projects Under Construction

<table>
<thead>
<tr>
<th>Name, Location and Description of Project</th>
<th>Owner</th>
<th>Design Engineer</th>
<th>Contract Price</th>
<th>PE 12/31/18 Amount Completed</th>
<th>Date of Scheduled Completion</th>
<th>Reference/Contact &amp; Address &amp; Phone</th>
</tr>
</thead>
</table>
| Iron Horse Park Superfund Site OU3 AOC 3A & 3B Waste & Wetland Remediation & Capping North Billerica, MA | Pan Am Railways | ERM             | $2,323,751        | 41%                          | April 2019                      | Lyndsey Colburn
ERM
1 Beacon Street, 5th Floor
Boston, MA 02108
t: 617-646-7829
e: lyndsey.colburn@erm.cor |
| Landfill 1 Remediation Orrington, ME                 | Mallinckrodt US c/o CDM Constructors | CDM Constructors | $2,444,540        | 88%                          | June 2019                      | Dean Carter, PE, Principal CDM Constructors
99 Industrial Way
Orrington ME 04474
t: 321-436-3920
e: carterde@cdmsmith.com |
| Former Dunham Bush Facility Site Remediation West Hartford, CT | Honeywell       | Wood, PLC       | $1,618,024        | 83%                          | June 2019                      | Andrew Harris, Branch Manager & Associate Project Manager Wood, PLLC
1090 Elm Street, Suite 201
Rocky Hill, CT 06067
t: 860-529-7191
e: andrew.g.harris @woodplc.com |
| Site Remediation & Capping Newington, CT             | Textron         | AECOM           | $1,378,308        | 65%                          | June 2019                      | Gregory Simpson, Director Site Remediation Textron, Inc.
40 Westminster Street Providence, RI 02903
t: 401-457-2635
e: gsimpson@textron.com |
## Schedule B – List of Current Projects Under Construction

<table>
<thead>
<tr>
<th>Name, Location and Description of Project</th>
<th>Owner</th>
<th>Design Engineer</th>
<th>Contract Price</th>
<th>PE 12/31/18 Amount Completed</th>
<th>Date of Scheduled Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackburn &amp; Union Privileges Superfund Site Lewis Pond Asbestos Sediment Removal Walpole, MA</td>
<td>WR Grace Covidien LP</td>
<td>Woodard &amp; Curran</td>
<td>$7,538,110</td>
<td>24%</td>
<td>September 2019</td>
</tr>
<tr>
<td>Building 137 Abatement and Demolition Fort Hamilton, NY</td>
<td>USACE Huntsville</td>
<td>USACE Huntsville</td>
<td>$3,041,443</td>
<td>2%</td>
<td>January 2020</td>
</tr>
</tbody>
</table>

### Reference/Contact & Address & Phone

Eric. E. Hultstrom, CHMM Senior Project Manager Woodard & Curran, Inc. 980 Washington Street, Suite 325 Dedham, MA 02026 t: 781-251-0200 X2449 e: ehulstrum@woodardcurran.com

USACE Huntsville 4820 University Square Huntsville, AL 35807 Ryan Carman, Project Manager t: 256-895-1271 e: ryan.carman@usace.army.mil
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Date started with this organization</th>
<th>Date started working in construction</th>
<th>Prior positions and experience in construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert L. Delhome</td>
<td>President/Managing Member</td>
<td>1/1/1997</td>
<td>1993</td>
<td>Environmental &amp; Civil Construction</td>
</tr>
<tr>
<td>Lou Schena</td>
<td>COO/CFO</td>
<td>5/1/2002</td>
<td>2002</td>
<td>Accounting &amp; Operations</td>
</tr>
<tr>
<td>Anthony Pisanelli, CHMM</td>
<td>Vice President</td>
<td>7/7/2008</td>
<td>1986</td>
<td>Environmental &amp; Civil Construction</td>
</tr>
<tr>
<td>Paul Bertolino</td>
<td>Project Executive</td>
<td>4/30/2007</td>
<td>1996</td>
<td>Environmental &amp; Civil Construction</td>
</tr>
<tr>
<td>Edward Price, CHST</td>
<td>Health &amp; Safety Director</td>
<td>12/2/2002</td>
<td>1989</td>
<td>Environmental &amp; Civil Construction</td>
</tr>
<tr>
<td>Timothy Cady, PE</td>
<td>Program Services Director</td>
<td>11/13/2005</td>
<td>1977</td>
<td>Engineering, Environmental &amp; Civil Construction</td>
</tr>
<tr>
<td>Jon Simpson</td>
<td>Transport &amp; Disposal Manager</td>
<td>11/1/1999</td>
<td>1997</td>
<td>Environmental &amp; Civil Construction</td>
</tr>
<tr>
<td>Chris Keough</td>
<td>Vice President, Construction Ops</td>
<td>4/23/2018</td>
<td>1993</td>
<td>Environmental &amp; Civil Construction</td>
</tr>
<tr>
<td>Paul Leofanti</td>
<td>Construction Operations Manager</td>
<td>4/21/2015</td>
<td>1993</td>
<td>Environmental &amp; Civil Construction</td>
</tr>
</tbody>
</table>
DIVISION 4

SCHEDULE OF VALUES
BID ITEM DEFINITIONS
BID ITEM DEFINITIONS

Phase III Construction – Stage I
Four Hills Landfill
Nashua, New Hampshire

The following describes the Bid Items and the mechanism for payment to CONTRACTOR for each Bid Item. All incidental costs such as overhead, profit, and insurance shall be factored into the Bid Item unit prices. All measurements are based on plan view areas and lengths without consideration of slope. Bidders should factor slope adjustments into their Bid Item unit prices.

Bid Item No. 1  Mobilization/Demobilization

Mobilization requires CONTRACTOR to furnish and/or deliver to the Site and maintain all materials, resources, tools, equipment, temporary support facilities, and utilities required to perform the Work. CONTRACTOR also shall secure and prepare areas approved by OWNER to stockpile materials. In addition, CONTRACTOR shall prepare all required written plans and schedules, including but not limited to: a Site-Specific Health and Safety Plan, initial and progress construction schedules, subcontractor work plans, information required for ENGINEER to complete the Notice of Intent (NOI) to construct a solid waste facility required by the New Hampshire Department of Environmental Services; prepare the project’s construction Stormwater Pollution Prevention Plan (SWPPP), and electronically file the NOI for coverage under the EPA’s Construction General Permit (CGP).

Demobilization requires CONTRACTOR to remove from the Site at the end of the Contract all remaining construction debris and all materials, resources, equipment, temporary support facilities, and utilities not needed at the completion of the Project.

The method of payment for this Bid Item is lump sum, with half of the bid amount of the contract paid by OWNER as part of the initial application for payment, provided that temporary support facilities are set up and construction equipment and materials are delivered to the Site. One quarter of the amount will be paid when the Work is 50 percent complete. The remainder will be paid after the Work is deemed substantially complete, CONTRACTOR provided Record Documents in accordance with the requirements of the Specifications, and CONTRACTOR demobilized from the Site, which shall include removal of all CONTRACTOR-owned materials, resources, equipment, temporary support facilities, and all remaining construction debris at the completion of the Project.

Bid Item No. 2  Demolition

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to demolish and/or remove features within the Site as generally described below:

a. Remove Litter Control Fence includes removing existing litter fence along southern limit of Phase II as indicated on the Drawings and storing in a location designated by OWNER for later reuse. Reinstallation of litter fence around limit of Phase III is carried under
Bid Item No. 27. Payment for this Bid Item will be made per linear foot of material removed based on pre- and post-demolition surveys performed by CONTRACTOR and approved by OWNER. OWNER may perform its own surveys to evaluate the quantity for payment.

b. *Remove Existing Culverts* includes removing and disposing of the dual 15-inch diameter reinforced concrete culverts where indicated on the Drawings. The culverts shall be disposed of in the active area of the landfill as directed by OWNER. Removal of existing concrete drainage structures is incidental to this Bid Item.

Payment for this Bid Item will be made on a lump sum basis.

c. *Remove and Salvage Existing Riprap* includes stripping the existing riprap from the southern swale of Phase II as shown on the Drawings. Riprap to be removed shall be stockpiled in a location designated by OWNER. Payment for this Bid Item will be made per cubic yard of material removed based on pre- and post-demolition surveys performed by CONTRACTOR and approved by OWNER. OWNER may perform its own surveys to evaluate the quantity for payment.

d. *Tree Removal* includes all labor, materials, equipment, tools, and apparatus needed to clear and remove all trees within the established limit of disturbance shown on the Drawings. Grubbing shall be carried under Bid Item No. 4. This Bid Item includes hauling of logs for disposal/processing elsewhere. Payment for this Bid Item will be per acre of tree removal based on pre- and post-demolition surveys performed by CONTRACTOR and approved by OWNER. OWNER may perform its own surveys to evaluate the quantity for payment.

e. *Decommissioning Piezometers (P-300 through P-303)* includes over drilling, removal of PVC pipe, and grouting of piezometers where indicated on the Drawings. The pipe shall be disposed of in the active area of the landfill as directed by OWNER. Payment for this Bid Item will be made per linear foot of decommissioning based on decommissioning logs prepared by the NH-licensed well driller. Decommissioning procedure shall be in accordance with NHDES standards.

f. *Decommissioning Monitoring Well (B-11T)* includes over drilling, removal of PVC pipe, and grouting of well where indicated on the Drawings. The pipe shall be disposed of in the active area of the landfill as directed by OWNER. Payment for this Bid Item will be made per linear foot of decommissioning based on decommissioning log prepared by the NH-licensed driller. Decommissioning procedure hall be in accordance with NHDES standards.

**Bid Item No. 3 Erosion and Sediment Control**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to install and maintain throughout the duration of the project the temporary erosion control measures consistent with the Drawings, Specifications, and good construction practices.
CONTRACTOR is responsible for inspecting and maintaining the temporary erosion control measures, which includes weekly inspections during the life of the project and after each storm event that produces 0.25 inches or more of rainfall. All damaged temporary erosion control measures shall be repaired promptly at no additional cost to OWNER. CONTRACTOR is responsible for remediation, restoration, and/or mitigation of eroded soil caused by uncontrolled stormwater runoff.

CONTRACTOR is responsible for employing an Environmental Monitor if the un-stabilized disturbed area exceeds five (5) acres. In accordance with Env-Wq 1505.03(d), the Environmental Monitor shall:

- Inspect the project site at least once a week until the un-stabilized disturbed area no longer exceeds 5 acres.
- Inspect the project site during any rain event in which 0.5 inches of precipitation or more falls within a 24-hour period. If the Environmental Monitor is unable to be present during such a storm, then the Environmental Monitor shall inspect the project site within 24 hours of the rain event.
- Submit a written report to be submitted to the NHDES within 24 hours of each inspection that is prepared under the supervision of, and stamped by, a qualified Professional Engineer licensed in the State of New Hampshire or a Certified Professional in Erosion and Sediment Control (CPESC).

Work incidental to this Bid Item includes removal of all Temporary Erosion and Sediment Control Features once permanent vegetation is established and temporary features are no longer needed, based on OWNER and/or ENGINEER’s discretion. Erosion and Sediment Controls required for the project include:

a. **Filter Log** includes installing and maintaining Filter Logs. This Work shall be consistent with the Specifications and good construction practices. CONTRACTOR shall furnish, install, and maintain Filter Logs where shown on the Drawings, downgradient of unstabilized slopes, and in areas that may be designated by ENGINEER or OWNER. Payment for Filter Logs will be made on a linear foot basis for the actual amount installed.

b. **Filter Log Inlet Protection** includes installing and maintaining Filter Log Inlet Protection in front of culvert inlets. This Work shall be consistent with the Specifications and good construction practices. CONTRACTOR shall furnish, install, and maintain Filter Log Inlet Protection where shown on the Drawings and in areas that may be designated by ENGINEER or OWNER. Payment for Filter Log Inlet Protection will be made for each Filter Log Inlet Protection constructed.

**Bid Item No. 4 Grubbing and Topsoil Removal**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to clear as required and remove all brush, shrubs, stumps, branches, and large roots within the established limit of disturbance shown on the Drawings to a depth of 2 feet below subgrade. This Bid Item includes hauling of stumps, brush, and roots for disposal/processing at an
approved location. Removal and hauling of existing stumps and brush piles within areas designated by OWNER is incidental to this Bid Item. Also included in this Bid Item is stripping of topsoil (where present) and stockpiling for reuse.

Payment for this Bid Item will be on a lump sum basis.

**Bid Item No. 5  Soil Excavation and Placement**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to excavate soil to grade and place and compact the excavated soil in areas requiring fill to achieve the proposed grade. The fill soil shall meet the requirements of Structural Fill and be placed and compacted in accordance with the Specifications. Dredging of sediment within the Stormwater Basin is not included in this Bid Item.

Payment for this Bid Item will be made per cubic yard of excavated material based on pre- and post-excavation surveys performed by CONTRACTOR and approved by OWNER. OWNER may perform its own surveys to evaluate the quantity for payment.

**Bid Item No. 6  Fill Placement**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to perform all operations necessary to procure, stockpile, place and compact Structural Fill as required to achieve the proposed grades show on the Drawings. Structural Fill shall be compacted in accordance with the Specifications. This item does not include gravel roadway materials or riprap.

This Bid Item shall be paid on a per cubic yard basis as measured by pre- and post-survey performed by CONTRACTOR and approved by OWNER. OWNER may perform its own surveys to evaluate the quantity for payment.

**Bid Item No. 7  Liner System**

a. **Screened Till** includes all labor, materials, equipment, tools, and apparatus needed to furnish, place, and compact a 6-inch thick lift of Screened Till within the limit of waste containment for Phase III as shown on the Drawings. Screened Till is the material on which the Secondary Geomembrane will be placed.

Payment for this Bid Item will be made per cubic yard of material placed based on pre- and post-stockpiling surveys performed by CONTRACTOR and approved by OWNER. OWNER may perform its own surveys to evaluate the quantity for payment.

b. **Secondary 60-mil Thick Textured HDPE Geomembrane** includes all labor, materials, equipment, tools, and apparatus needed to furnish and install the Secondary 60-mil Thick Textured High-Density Polyethylene (HDPE) Geomembrane within the Phase III limit of waste containment as shown on the Drawings and in accordance with the Specifications. The unit price for this Bid Item includes all pre-approval and quality control testing,
delivery, unloading, moving, and storage of the geomembrane, as well as the amount of
geomembrane used for overlap and in anchor trenches.

Payment will be made on a per square yard basis for the Secondary Geomembrane
installed within the limit of waste containment as measured by survey of the actual plan
area. Geomembrane installed beyond the limit of waste containment is incidental to this
Bid Item.

c. **Secondary Drainage Geocomposite** includes all labor, materials, equipment, tools, and
apparatus needed to furnish and install the Secondary Drainage Geocomposite within the
Phase III limit of waste containment as shown on the Drawings and in accordance with
the Specifications. The unit price for this Bid Item includes all pre-approval and quality
control testing, delivery, unloading, moving, and storage of the Drainage Geocomposite,
as well as the amount of Secondary Drainage Geocomposite used for overlap and in
anchor trenches.

Payment will be made on a per square yard basis for the Secondary Drainage
Geocomposite installed within the limit of waste containment as measured by survey of
the actual plan area. Secondary Drainage Geocomposite installed beyond the limit of
waste containment is incidental to this Bid Item.

d. **Secondary Drainage Sand** includes all labor, materials, equipment, tools, and apparatus
needed to furnish and place a 12-inch thick lift of Drainage Sand over the Secondary
Drainage Geocomposite in the Phase III base area as indicated on the Drawings, in
accordance with the Specifications.

Payment for this Bid Item will be made on a cubic yard basis of in-place secondary
Drainage Sand in the Phase III base area as measured by survey of the actual plan area.

e. **Geosynthetic Clay Liner** (GCL) includes all labor, materials, equipment, tools, and
apparatus needed to furnish and install the GCL within the Phase III limit of waste
containment as shown on the Drawings and in accordance with the Specifications. The
unit price for this Bid Item includes all pre-approval and quality control testing, delivery,
unloading, moving, and storage of the GCL, as well as the amount of GCL used for overlap
and in anchor trenches.

Payment will be made on a per square yard basis for the GCL installed within the Phase
III limit of waste containment as measured by survey of the actual plan area. GCL
installed beyond the limit of waste containment is incidental to this Bid Item.

f. **Primary 60-mil Thick Textured HDPE Geomembrane** includes all labor, materials,
equipment, tools, and apparatus needed to furnish and install the Primary 60-mil Thick
Textured HDPE Geomembrane within the Phase III limit of waste containment as shown
on the Drawings and in accordance with the Specifications. The unit price for this Bid
Item includes all pre-approval and quality control testing, delivery, unloading, moving,
and storage of the geomembrane, as well as the amount of geomembrane used for
overlap and in anchor trenches.
Furnishing, installing, and anchoring the geomembrane rain flap on interim stormwater berms is incidental to this Bid Item.

Payment will be made on a per square yard basis for the Primary Geomembrane installed within the limit of waste containment as measured by survey of the actual plan area. Geomembrane installed beyond the limit of waste containment is incidental to this Bid Item.

g. **Primary Drainage Geocomposite** includes all labor, materials, equipment, tools, and apparatus needed to furnish and install the Primary Drainage Geocomposite within the Phase III limit of waste containment as shown on the Drawings and in accordance with the Specifications. The unit price for this Bid Item includes all pre-approval and quality control testing, delivery, unloading, moving, and storage of the Primary Drainage Geocomposite, as well as the amount of Primary Drainage Geocomposite used for overlap and in anchor trenches.

Payment will be made on a per square yard basis for the Primary Drainage Geocomposite installed within the limit of waste containment as measured by survey of the actual plan area. Primary Drainage Geocomposite installed beyond the limit of waste containment is incidental to this Bid Item.

h. **Primary Drainage Sand** includes all labor, materials, equipment, tools, and apparatus needed to furnish and place an 18-inch thick lift of Drainage Sand over the Primary Drainage Geocomposite in the Phase III limit of waste containment as indicated on the Drawings, in accordance with the Specifications. Furnishing and placing Drainage Sand to construct interim stormwater berms is incidental to this Bid Item.

Payment for this Bid Item will be made on a cubic yard basis of in-place Drainage Sand within the Phase III limit if waste as measured by survey of the actual plan area.

**Bid Item No. 8  Landfill Berms and Anchor Trenches**

a. **Perimeter Berm** includes all labor, materials, equipment, tools, and apparatus needed to excavate the anchor trench, place and compact a 6-inch thick layer of Screened Till, weld the Primary and Secondary Geomembranes together, backfill with Screened Till (compacted), install the plywood sheets, construct the riprap-lined perimeter swale as shown on the Drawings. Please note that payment for the portion of the geosynthetics outside the limit of waste is included in Item No. 7. Construction of the gravel road and guardrail is included in other Bid Items.

Payment will be made on a linear foot basis and measured in plan view along the limit of waste containment.

b. **Liner Connection Along Phase II Berm** includes all labor, materials, equipment, tools, and apparatus needed to excavate and expose the existing Phase II anchor trench, place and compact a 6-inch thick layer of Screened Till, weld the secondary liner to the existing secondary liner, and weld the primary liner to the existing primary liner.
Payment will be made on a linear foot basis and measured in plan view along the limit of waste containment.

**Bid Item No. 9  Leachate Sump Construction**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to construct the Phase III primary and secondary leachate collection sumps as shown on the Drawings. Work shall include but is not necessarily limited to, excavating soil and grading as required, placing and compacting a 6-inch thick lift of Screened Till beneath the sump and beneath the sump riser trench, fine grading the sump base grades, furnishing and installing the geomembrane rubsheets in the sump and sump riser section, furnishing and installing the HDPE sump riser pipes including the connections to the leachate collection pipe, HDPE pipe boots, HDPE fittings, the nonwoven geotextile, and the Crushed Stone. The Work also shall include extending the primary, secondary, and cleanout risers beyond the limit of waste to the sump riser building.

Payment limits for this Bid Item extend three (3) feet outside the sump and sump riser trench to the Sump Riser Building as shown on the Drawings, including the welds required to connect the geomembrane rubsheets to the respective Primary and Secondary Geomembranes. This Bid Item shall be paid on a lump sum basis.

**Bid Item No. 10  Installation of 8-inch Diameter Solid and Perforated HDPE Pipe**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to furnish and install the Primary and Secondary 8-inch diameter SDR-17 HDPE solid and perforated leachate collection pipe in the locations shown on the Drawings. This Bid Item includes the Crushed Stone and geotextile surrounding the leachate collection pipes, all fittings required for a complete installation, extending the pipe for cleanouts, and the HDPE pipe boots at the secondary cleanout locations.

Payment for this Bid Item will be made on a linear foot basis for the length of 8-inch diameter solid and perforated pipe installed.

**Bid Item No. 11  Sump Riser Building**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to perform all operations necessary to construct a complete Sump Riser Building, including foundation, concrete masonry units, and framed superstructure. This Work shall include excavating soil, placing formwork, steel reinforcement, cast-in-place concrete, waterproofing, placing and compacting backfill, grading, and placing entryway crushed stone for the foundation. Work for concrete masonry units includes grout, mortar and reinforcing. The framed structure shall include framing, sheathing, roofing, rain gutters, insulation, ventilation, painting and staining, doors, hardware, and other components indicated on the Drawings or in the Specifications.
CONTRACTOR is responsible for retaining a structural engineer to design the proposed structure in accordance with state and local regulations. Building permits required by local regulations are incidental to this Bid Item.

Payment for this Bid Item will be on a lump sum basis.

**Bid Item No. 12  Electrical Construction**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to provide a complete electrical installation for the Sump Riser Building as indicated on the Drawings and in the Specifications. Included in this Bid Item is installation of all electrical conduits not proposed to be installed as part of Bid Item No. 13. Coordination with Eversource is included in this Bid Item regarding the extension of the existing electrical overhead distribution for the Sump Riser Building as indicated on the Drawings.

All electrical Work shall be in compliance with applicable codes and standards and shall include extending the electric service from the existing electric system, installation of service wiring and branch circuits, installation of lights, disconnects, transformers, breakers, heaters, conduits, and other components required for a complete installation. This Bid Item shall also include the lighting exterior for the Sump Riser Building.

Payment for this Bid Item will be made on a lump sum basis.

**Bid Item No. 13  Controls and Instrumentation**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to furnish and install the control system panels and the instrumentation for the leachate pump system. The control panels shall include motor starters, totalizing indicators, intrinsically safe barriers, LED panel meters, and electronic control/telemonitoring system. This Bid Item shall include furnishing and installing flow meters, level switches, signal wiring and conduit, and other components for a complete installation.

Payment for this Bid Item will be made on a lump sum basis.

**Bid Item No. 14  Leachate Pumping System**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to furnish and install the leachate pumping system in the Sump Riser Building and sideslope risers. Included in this Bid Item are the leachate pumps, pipe, valves, fittings, sample tubing, pipe and tubing supports, and other components required for a complete system as shown on the Drawings. Pressure testing of the installed system shall also be included.

Payment for this Bid Item will be made on a lump sum basis.
Bid Item No. 15  Utility Trenches

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to perform all operations necessary to furnish and install HDPE force mains, conductors, and PVC electrical conduit of the size and pressure ratings in accordance with the Drawings and Specifications. Utility trenches shall be installed as shown on the Drawings, and force mains shall be pressure tested as specified. This Bid Item shall include excavating soil, furnishing and placing Drainage Sand, conductive pipe warning tape, and all materials required for a complete installation.

Payment for Utility Trenches will be made on a linear foot basis for the actual amount installed.

Bid Item No. 16  Connection to the Phase II Leachate Collection System

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to connect the Phase III leachate collection system to the existing Phase II leachate collection system as shown on the Drawings. Included in this item is furnishing and installing the HDPE pipes and fittings, connecting the leachate force main to the gravity main, placing the gravity main and primary cleanout risers over the Phase II liner system, placing the secondary cleanout riser in a trench below the Phase III liner system, and connecting the existing leachate collection pipe. Excavation of waste and leachate collection material, cutting and capping existing pipe, backfilling the excavation with waste, and restoration of the Phase II leachate collection materials are incidental to this item.

Payment for this Bid Item will be made on a lump sum basis.

Bid Item No. 17  Stormwater Basin

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to perform all operations necessary to construct a functioning stormwater basin as indicated on the Drawings.

a. *Dredging the Existing Portion of the Basin* includes removing accumulated sediment from within the existing portion of the Stormwater Basin as indicated on the Drawings to restore to design grades. Dredged sediment shall be hauled to the active face of the landfill.

Payment for this Bid Item will be on a lump sum basis.

b. *Remove Portion of the Existing Culvert* includes exposing, cutting, and removing a portion of the 12-inch diameter corrugated plastic pipe (CPP) culvert, and disposal of the culvert and the associated headwall at the active face of the landfill. Soil excavation to expose the culvert is included in other Bid Items.

Payment for this Bid Item will be on a lump sum basis.
c. **Low-Permeability Soil** includes furnishing, placing, and compacted a 12-inch thick lift of Screened Till within Pond 6 and the Forebay as shown on the Drawings.

Payment for this Bid Item will be made per cubic yard of material placed based on pre- and post-stockpiling surveys performed by CONTRACTOR and approved by OWNER. OWNER may perform its own surveys to evaluate the quantity for payment.

d. **Spillway** includes furnishing and installing the spillway for the Stormwater Basin as shown on the Drawings and as specified. This Bid Item includes excavating soil to form the riprap-lined spillway and placing the nonwoven geotextile and riprap.

Payment for this Bid Item will be on a lump sum basis for a complete installation.

e. **Wetland Plantings** includes furnishing and installing the wetland plants within the Stormwater Basin as shown on the Drawings.

Payment will be made on a lump sum basis once a satisfactory stand of vegetation is established as determined by OWNER.

f. **Modifying the Existing Discharge Structure** includes increasing the diameter of the second row of orifices in the outlet structure from 3 inches to 6 inches as indicated on the Drawings.

Payment for this Bid Item will be on a lump sum basis.

g. **Level Spreader** includes furnishing and installing the level spreader for the Stormwater Basin as shown on the Drawings and as specified. This Bid Item includes excavating soil and placing crushed stone.

Payment for this Bid Item will be on a lump sum basis.

**Bid Item No. 18  Riprap-Lined Swale**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to perform earthwork necessary to grade the swale and install riprap lining where indicated on the Drawings. This Bid Item includes, but is not limited to, furnishing and installing the nonwoven geotextile as shown on the Drawings.

Payment for this Bid Item will be on a linear foot basis for the riprap-lined swale section constructed.

**Bid Item No. 19  Geomembrane-Lined Swale**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to install geomembrane-lined swales at the various lengths and dimensions indicated on the Drawings.
and as specified. The Work includes shaping the swale section and installing the geomembrane as indicated on the Drawings. Payment for this Bid Item will be on a lineal foot basis for the geomembrane-lined swale constructed.

**Bid Item No. 20   Smartditch-Lined Downchute**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to furnish and install Smartditch-lined downchute as indicated on the Drawings. The Work includes shaping the swale section, placing and compacting a 4-inch thick layer of Drainage Sand beneath the downchute bottom, and installing the Smartditch according to manufacturer’s recommendations.

Payment for this Bid Item will be on a linear foot basis for the Smartditch-lined downchute constructed.

**Bid Item No. 21   Temporary Slope Diversion Swale**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to construct the temporary slope diversion swale on the southern Phase II sideslope above Phase III in accordance with the Drawings and Specifications. The Work includes placing and shaping Screened Till to form the swale and furnishing and installing the 12-mil thick scrim reinforced geomembrane to cover the Screened Till in the swale. Excavating soil to create anchor trenches for the scrim reinforced geomembrane is included in the Work.

Payment for this Bid Item will be on a linear foot basis for temporary slope diversion swale constructed.

**Bid Item No. 22   Drain Manhole**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to furnish and install the drain manhole as shown on the Drawings and as specified. This Bid Item includes excavating soil, installing the structure, furnishing and placing Crushed Stone, and placing and compacting backfill. Furnishing and installing the frame, cover, pipe connector, and corrugated pipe adapter as indicated on the Drawings is incidental to this Bid Item.

Payment for installation of the drain manhole will be on a lump sum basis. Payment for connection to drainage pipes is included in Item No. 23.

**Bid Item No. 23   Culverts**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to furnish and install culverts indicated as shown on the Drawings and as specified. This Bid Item includes furnishing, excavating, placing, and compacting Drainage Sand as pipe bedding, installing the culvert, and placing and compacting backfill. Installation of head walls, end sections, connection to drain manholes, and geomembrane boots at culvert outlets where
shown on the Drawings is to be included in the Work associated with the installation of the respective culvert.

Payment for installation of culverts will be on a lump sum basis for a complete installation of each culvert identified.

**Bid Item No. 24   Topsoil and Seeding**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to place Topsoil capable of growing grass, and to seed and mulch areas outside the Phase III limit of waste containment, but within the limit of disturbance, and soil borrow areas (not including gravel or paved roadway areas), as indicated on the Drawings in accordance with the Specifications.

Payment will be made on a per acre basis as measured by survey once a satisfactory stand of vegetation is established as determined by OWNER.

**Bid Item No. 25   Gravel Road**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to construct the gravel road section in areas indicated on the Drawings. The Work includes and proof rolling the subgrade and furnishing, placing, and compacting the road materials as Shown on the Drawings.

Payment for this Bid Item will be made on a square yard basis as measured by survey of the constructed Gravel Road.

**Bid Item No. 26   Extend Existing Groundwater Wells**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to extend the existing groundwater monitoring wells where indicated on the Drawings (i.e., B-4, WM-110 S/R, and MW-111 S/R). The Work requires that a New Hampshire-licensed water well contractor extend the monitoring wells according to NHDES standards. Maintaining each monitoring well's integrity throughout the project and repairing any damage to monitoring wells caused by the CONTRACTOR shall be incidental to this item.

Payment for this Bid Item will be made on a linear foot basis for each well extended to final grade.

**Bid Item No. 27   Litter Control Fence**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to install litter fence as indicated on the Drawings. The Work includes excavating soil, backfilling, and installing poles and netting as specified by the manufacturer.
a. **Install Existing Litter Control Fence** includes installing litter control fence removed as part of Bid Item 2 in accordance with the Drawings and manufacturer specifications. Repairing damaged netting at the discretion of the OWNER is incidental to this Bid Item.

Payment for this Bid Item will be made on a linear foot basis for existing litter control fence installed.

b. **Install New Litter Control Fence** includes furnishing and installing new litter control fence where indicated on the Drawings and in accordance with manufacturer specifications. Litter control fence shall match the existing litter control fence on site or be an equivalent approved by the OWNER.

Payment for this Bid Item will be made on a linear foot basis for litter control fence furnished and installed.

**Bid Item No. 28 Guardrail**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to furnish and install guardrail as indicated on the Drawings. Guardrail shall conform to NHDOT requirements. The Work includes all end sections and connections.

Payment for this Bid Item will be made on a linear foot basis for guardrail constructed.

**Bid Item No. 29 As-Built Drawings**

This Bid Item includes all labor, materials, equipment, tools, and apparatus needed to prepare the As-Built Drawings as required by the Specifications. The Work includes the redline mark-ups of the construction Drawings modified as Work progresses. As-Built Drawings shall bear the stamp of a professional engineer or land surveyor licensed in New Hampshire and be drafted using computer aided drafting (CAD) software and be provided to ENGINEER in hard copy and electronic format. The electronic files should include all survey points used to generate the drawings. The As-Built Drawings are to be provided within 30 days of issuance of a “Certificate of Substantial Completion.”

Payment for this Bid Item will be on a lump sum basis following final receipt of the As-Built Drawings.

**Bid Item No. 30 Payment Bond**

This Bid Item includes furnishing a payment bond for the project and will be paid on a lump sum basis.

**Bid Item No. 31 Performance Bond**

This Bid Item includes furnishing a performance bond for the project and will be paid on a lump sum basis.
ALTERNATE BID ITEM DEFINITIONS

Alternate Bid Item No. A7 Leak Detection Survey

This Alternate Bid Item includes all labor, materials, equipment, tools, and apparatus needed to perform a geoelectric leak location survey on the primary geomembrane liner. Survey shall be conducted by Leak Location Services, Inc. of San Antonio, Texas, or approved equivalent by the ENGINEER. Survey methods must be approved by ENGINEER prior to installation of liner materials. Locations of electrodes and wiring beneath the primary liner system shall be approved by ENGINEER prior to installation if liner materials.

Payment for this Alternate Bid Item will be on a lump sum basis for a leak location survey.

Alternate Bid Item No. A24 Screening Vegetation

This Alternate Bid Item requires furnishing and installing trees and shrubs for visual screening in accordance with horticultural practices. The varieties, locations, and quantities shall be determined by the OWNER. The CONTRACTOR shall be responsible for all watering, reftertilizing, pruning, etc. as required during the establishment period to provide for a complete and healthy plant installation.

Payment for this Alternate Bid Item will be on a lump sum basis for a complete installation. Payment will include all excavation, backfilling, guying, staking, pruning, mulching, fertilizing, watering, reftertilization as necessary, replanting as needed, and stage and guy removal after the establishment period for a complete and healthy plant installation.

Alternate Bid Item No. A27 Portable Litter Fence

This Alternate Bid Item includes procurement of up to four (4) Portable Litter Containment System Units by Coastal Netting Systems or approved equal by the OWNER. Portable units shall be 16 feet tall by 50 feet long, come with a tow cable, and be designed for 100 percent loading at wind speeds up to 70 mph.

Payment for this Alternate Bid Item will be based on total number of portable units procured.
# Schedule of Values - Bid Items
## Phase III Construction - Stage I
### Four Hills Landfill
#### Nashua, New Hampshire
(Revised February 2019)
Charter Contracting Company, LLC
January 20, 2019 | Page 1 of 3

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Construction Items</th>
<th>Estimated Quantity (w/units)</th>
<th>Bid Unit Prices ($/units)</th>
<th>Extended Prices ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization/Demobilization</td>
<td>1 LS</td>
<td>$500,000.00 LS</td>
<td>$500,000.00</td>
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<td>2</td>
<td>Demolition</td>
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<tr>
<td></td>
<td>a. Remove Litter Control Fence</td>
<td>950 LF</td>
<td>$31.00 LF</td>
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<tr>
<td></td>
<td>b. Remove Existing Culverts</td>
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<td>$1,200.00</td>
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<tr>
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<td>c. Remove and Salvage Existing Riprap</td>
<td>55 CY</td>
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<td>d. Tree Removal</td>
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<td>e. Decommissioning Pleometers</td>
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<td>f. Decommissioning Monitoring Well</td>
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<td>Erosion and Sediment Control</td>
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<td>a. Filter Log</td>
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<td>Grubbing and Topsoil Removal</td>
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<td>Soil Excavation and Placement</td>
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<td>Fill Placement</td>
<td>59,800 CY</td>
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<td>Liner System</td>
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<td></td>
<td>a. Screened Till</td>
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<td>1. From Stockpile</td>
<td>2,500 CY</td>
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<td>2. Import</td>
<td>2,245 CY</td>
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<td>b. Secondary 60-mil thick, Textured HDPE Geomembrane</td>
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<td>$5.00 SY</td>
<td>$142,225.00</td>
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<tr>
<td></td>
<td>c. Secondary Drainage Geocomposite</td>
<td>28,445 SY</td>
<td>$5.80 SY</td>
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<tr>
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<td>d. Secondary Drainage Sand Layer</td>
<td>1,660 CY</td>
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<td>e. Geosynthetic Clay Liner</td>
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<td>f. Primary 60-mil Textured HDPE Geomembrane</td>
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<tr>
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<td>g. Primary Drainage Geocomposite</td>
<td>28,445 SY</td>
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<td></td>
<td>h. Primary Drainage Sand Layer</td>
<td>14,225 CY</td>
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<tr>
<td>8</td>
<td>Landfill Berms and Anchor Trenches</td>
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<tr>
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<td>a. Perimeter Berm</td>
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<td>b. Liner Connection Along Phase II Berm</td>
<td>605 LF</td>
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<td>9</td>
<td>Leachate Samps Construction</td>
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<td>Installation of 8-Inch Diameter Solid and Perforated HDPE Pipe</td>
<td>4,830 LF</td>
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<td>Sump Riser Building</td>
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<td>Electrical Construction</td>
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<td>13</td>
<td>Controls and Instrumentation</td>
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<td>14</td>
<td>Leachate Pamping System</td>
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<td>Utility Trench</td>
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<td>16</td>
<td>Connection to the Phase II Leachate Collection System</td>
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<td>17</td>
<td>Stormwater Basin</td>
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<tr>
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<td>a. Dredging the Existing Portion of the Basin</td>
<td>1 LS</td>
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<td>$7,500.00</td>
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<td>b. Remove Portion of Existing Culvert</td>
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<td>$1,100.00</td>
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<td>c. Low-Permeability Soil</td>
<td>1,070 CY</td>
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<td>d. Spillway</td>
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<td>$4,000.00</td>
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<td>e. Wetland Plantings</td>
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<td>$3,500.00</td>
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<td>f. Modifying the Existing Discharge Structure</td>
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<td>$2,500.00 LS</td>
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<tr>
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<td>g. Level Spreader</td>
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<td>$1,500.00 LS</td>
<td>$1,500.00</td>
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<td>18</td>
<td>Riprap-Lined Swales</td>
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<td>20</td>
<td>Smartditch-Lined Downchute</td>
<td>210 LF</td>
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<td>$25,200.00</td>
</tr>
</tbody>
</table>
## Schedule of Values - Bid Items

**Phase III Construction - Stage I**  
Four Hills Landfill  
Nashua, New Hampshire  
(Revised February 2019)  
Charter Contracting Company, LLC  
January 20, 2019 | Page 2 of 3

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Construction Items</th>
<th>Estimated Quantity (w/units)</th>
<th>Bid Unit Prices ($/units)</th>
<th>Extended Prices ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Temporary Slope Diversion Swale</td>
<td>670 LF</td>
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<td>$20,100.00</td>
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<tr>
<td>22</td>
<td>Drain Manhole</td>
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<tr>
<td>23</td>
<td>Culverts</td>
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<tr>
<td>23a</td>
<td>C-1 (36-inch diameter CPP)</td>
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<tr>
<td>23b</td>
<td>C-2 (36-inch diameter CPP)</td>
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<tr>
<td>23c</td>
<td>C-3 (18-inch diameter CPP)</td>
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<td>23d</td>
<td>C-4 (24-inch diameter CPP)</td>
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<td>24</td>
<td>Topsoil and Seeding</td>
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<td>25</td>
<td>Gravel Road</td>
<td>40 LF</td>
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<tr>
<td>27</td>
<td>Litter Control Fence</td>
<td>28 AS-Built Drawings</td>
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<td>Install Existing Litter Control Fence</td>
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<td>Performance Bond</td>
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**Bid Price**: $5,394,525.00
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<tr>
<th>Alt. Bid Item No.</th>
<th>Construction Items</th>
<th>Estimated Quantity (w/units)</th>
<th>Bid Unit Prices ($/units)</th>
<th>Extended Prices ($)</th>
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<tbody>
<tr>
<td>A7</td>
<td>Leak Detection Survey</td>
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<td>A24</td>
<td>Screening Vegetation</td>
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<td>Portable Litter Fence</td>
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**Bid Price** $131,000.00
BID BOND

Conforms with The American Institute of Architects, A.I.A. Document No. A-310

KNOW ALL BY THESE PRESENTS, That we, Charter Contracting Company LLC

500 Harrison Avenue, Suite 4R, Boston, MA 02118-2439

as Principal, hereinafter called the Principal,

and the Arch Insurance Company

of 3 Parkway, Ste. 1500, Philadelphia, PA 19102

a corporation duly organized under

the laws of the State of Missouri

as Surety, hereinafter called the Surety, are held and firmly bound unto

City of Nashua, Central Purchasing
229 Main Street, Room 128, Nashua, NH 03061

as Obligee, hereinafter called the Obligee,

in the sum of Five Percent of Bid Amount

Dollars ($ 5% of Bid Amount ), for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for Phase III Landfill Expansion IFB 0593-022019 Four Hills Landfill, 840 West Hollis Street, Nashua NH

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this 20th day of February, 2019.

Witness

Charter Contracting Company LLC (Seal)

Principal

Robert L. Delhome, President

Title

Arch Insurance Company

By

Timothy P. Lyons, Attorney-in-Fact
THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON BLUE BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated. Not valid for Note, Loan, Letter of Credit, Currency Rate, Interest Rate or Residential Value Guarantees.

POWER OF ATTORNEY

Know All Persons By These Presents:

That the Arch Insurance Company, a corporation organized and existing under the laws of the State of Missouri, having its principal administrative office in Jersey City, New Jersey (hereinafter referred to as the “Company”) does hereby appoint:

Clarence S. Powers, Dennis W. Driscoll, George G. Powers, John C. Driscoll, Martin L. Bohringer and Timothy P. Lyons of Norwell, MA

its true and lawful Attorney(s)in-Fact, to make, execute, seal, and deliver from the date of issuance of this power for and on its behalf as surety, and as its act and deed:

Any and all bonds, undertakings, recognizances and other surety obligations, in the penal sum not exceeding Ninety Million Dollars ($90,000,000.00).

This authority does not permit the same obligation to be split into two or more bonds in order to bring each such bond within the dollar limit of authority as set forth herein.

This execution of such bonds, undertakings, recognizances and other surety obligations in pursuance of these presents shall be as binding upon the said Company as fully and amply to all intents and purposes as if the same had been duly executed and acknowledged by its regularly elected officers at its principal administrative office in Jersey City, New Jersey.

This Power of Attorney is executed by authority of resolutions adopted by unanimous consent of the Board of Directors of the Company on September 15, 2011, true and accurate copies of which are hereinafter set forth and are hereby certified to by the undersigned Secretary as being in full force and effect.

VOTED, That the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or any one or more of them, or their appointees designated in writing and filed with the Secretary, or the Secretary shall have the power and authority to appoint agents and attorneys-in-fact, and to authorize them subject to the limitations set forth in their respective powers of attorney, to execute on behalf of the Company, and attach the seal of the Company thereto, bonds, undertakings, recognizances and other surety obligations obligatory in the nature thereof, and any such officers of the Company may appoint agents for acceptance of process.

This Power of Attorney is signed, sealed and certified by facsimile under the authority of the following resolution adopted by the unanimous consent of the Board of Directors of the Company on September 15, 2011:

VOTED, That the signature of the Chairman of the Board, the President, or the Executive Vice President, or any Senior Vice President, of the Surety Business Division, or any other officer, or their appointees designated in writing and filed with the Secretary, or the signature of the Secretary, the seal of the Company, and certifications by the Secretary, may be affixed by facsimile on any powers, bonds, undertakings, or recognizances executed pursuant to the resolution adopted by the Board of Directors on September 15, 2011, and any such power, bond, undertaking, or recognizance, when signed, sealed and certified with respect to any bond or undertaking to which it is attached, shall continue to be valid and binding upon the Company.
In Testimony Whereof, the Company has caused this instrument to be signed and its corporate seal to be affixed by their authorized officers, this 15th day of May, 2018.

Attested and Certified

Patrick K. Nails, Secretary

STATE OF PENNSYLVANIA SS
COUNTY OF PHILADELPHIA SS

I, Michele Tripodi, a Notary Public, do hereby certify that Patrick K. Nails and David M. Finkelstein personally known to me to be the same persons whose names are respectively as Secretary and Executive Vice President of the Arch Insurance Company, a Corporation organized and existing under the laws of the State of Missouri, subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that they being thereunto duly authorized signed, sealed with the corporate seal and delivered the said instrument as the free and voluntary act of said corporation and as their own free and voluntary acts for the uses and purposes therein set forth.

Michele Tripodi, Notary Public
My commission expires 07/31/2021

CERTIFICATION

I, Patrick K. Nails, Secretary of the Arch Insurance Company, do hereby certify that the attached Power of Attorney dated May 15, 2018 on behalf of the person(s) as listed above is a true and correct copy and that the same has been in full force and effect since the date thereof and is in full force and effect on the date of this certificate; and I do further certify that the said David M. Finkelstein, who executed the Power of Attorney as Executive Vice President, was on the date of execution of the attached Power of Attorney the duly elected Executive Vice President of the Arch Insurance Company.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seal of the Arch Insurance Company on this 30th day of February, 2019.

Patrick K. Nails, Secretary

This Power of Attorney limits the acts of those named therein to the bonds and undertakings specifically named therein and they have no authority to bind the Company except in the manner and to the extent herein stated.

PLEASE SEND ALL CLAIM INQUIRIES RELATING TO THIS BOND TO THE FOLLOWING ADDRESS:

Arch Insurance – Surety Division
3 Parkway, Suite 1500
Philadelphia, PA 19102
DIVISION 5

PERFORMANCE BOND
PAYMENT BOND
CERTIFICATE OF INSURANCE
CONSTRUCTION PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a ___________________________________________ , hereinafter called Principal,

(Corporation, Partnership or Individual)

and

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the total aggregate penal sum

Dollars, $ ________ )

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the ___________ day of ___________ 20 _____ , a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extension thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if the PRINCIPAL shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void: otherwise to remain in full force and effect.

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PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the specifications accompanying same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time alteration or addition to the terms of the contract or to the WORK or to the specifications.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed ___________ counterparts, each one of which shall be deemed an original, this ___________ day of ______________ , 20 ___.

ATTEST:

By: _____________________________
    (Principal) Secretary

(SEAL) ___________________________

By: _____________________________
    Witness as to Principal

_______________________________
    (Address)

_______________________________
    (Surety)

ATTEST: _________________________

By: _____________________________
    Witness as to Surety

_______________________________
    (Address)

_______________________________
    (Address)

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is Partnership, all partners should execute BOND

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of New Hampshire

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CONSTRUCTION PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a (Corporation, Partnership or Individual), hereinafter called Principal,

and

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of Owner)

(Address of Owner)

hereinafter called OWNER and unto all persons, firms, and corporations who or which may furnish labor, or who furnish materials to perform as described under the contract and to their successors and assigns, in the total aggregate penal sum of __________________________ Dollars, ($ __________ ) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the ______________ day of ______________ 20 ____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and for all labor cost incurred in such WORK including that be a subcontractor, and to any mechanic or material man lienholder whether it acquires its lien by operation of State or Federal Law; then this obligation shall be void; otherwise to remain in full force and effect.
PROVIDED, that beneficiaries or claimants hereunder shall be limited to the subcontractors, and persons, firms, and corporations having a direct contract with the PRINCIPAL or its SUBCONTRACTORS.

PROVIDED FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed hereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER that no suit or action shall be commenced hereunder by any claimant: (a) Unless claimant, other than one having a direct contract with the PRINCIPAL shall have given written notice to any two of the following: The PRINCIPAL, the OWNER, or the SURETY above named within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the PRINCIPAL, OWNER, or SURETY, at any place where an office is regularly maintained for the transaction business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer. (b) After the expiration of one (1) year following the date on which PRINCIPAL ceased work on said CONTRACT, it being understood, however, that if any limitation embodied in the BOND is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

PROVIDED FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.
IN WITNESS WHEREOF, this instrument is executed in ___________________________ counterparts, each one of (number) ___________________________
which shall be deemed an original, this ___________________________ day of _______________________ , 20 __________

ATTEST:

By: ___________________________
    (Principal) Secretary

(SEAL)

By: ___________________________
    Witness as to Principal
    (Address)

______________________________

(Principal)

______________________________

(Address)

ATTEST:

BY ___________________________

______________________________

(Surety)

______________________________

(Address)

______________________________

(Address)

BY ___________________________

______________________________

(Attorney - in - Fact)

______________________________

(Address)

______________________________

(Address)

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR is partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of New Hampshire.
STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR

THIS AGREEMENT is dated as of the _____ day of _____________ in the year 2019 by and between the City of Nashua, New Hampshire (hereinafter called OWNER) and Charter Contracting Company, LLC and its successors, transferees and assignees together hereinafter called CONTRACTOR).

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

ARTICLE 1 - WORK

1.01 CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents.

ARTICLE 2 - THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

The scheduled work includes but is not limited to, site preparation, landfill liner base grade preparation, installing a double High Density Polyethylene (HDPE) plastic liner system, installing leachate collection and removal piping, pumps and appurtenances, and constructing storm water control infrastructure.

ARTICLE 3 - ENGINEER

3.01 The Project has been designed by: Sanborn, Head & Associates
20 Foundry Street
Concord, NH 03301

who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities, and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT TIMES

4.01 Time of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Dates for Substantial Completion and Final Payment

A. The Work will be substantially completed within 150 calendar days of issuance of the “Notice to Proceed”. Substantial completion is defined in paragraph 1.01.43 of the General Conditions. The Contract Times commence to run as provided in paragraph 2.03 of the General Conditions, and completed and ready for final payment, in accordance with paragraph 14.07 of the General Conditions, within 180 calendar days of issuance of the “Notice to Proceed”.

4.03 Liquidated Damages

A. CONTRACTOR and OWNER recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the
delays, expense and difficulties involved in proving in a legal or arbitration preceding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER FIVE HUNDRED dollars ($500) for each calendar day that expires after the time specified in paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the time specified in paragraph 4.02 for completion and readiness for final payment or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER FIVE HUNDRED dollars ($500) for calendar each day that expires after the time specified in paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

B. In the event that the CONTRACTOR fails to pay OWNER the specified liquidated damages amount within thirty (30) days of CONTRACTOR’s being notified of said damages, OWNER may deduct the amount of the assessed liquidated damages from the final payment or retention withheld pursuant to Article 14 of the General Conditions.

ARTICLE 5 - CONTRACT PRICE

5.01 Subject to additions and deductions by Change Order, the OWNER shall pay CONTRACTOR, in accordance with the Contract Documents, the Contract Sum of:

Five Million Five Hundred Twenty-Five Thousand Five Hundred Twenty-Five and 00/100 Dollars
($5,525,525.00)

The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work determined below:

A. for all Unit Price Work, an amount equal to the sum of the established Unit Price for each separately identified item of Unit Price Work times the estimated quantity of that item, as indicated in the attached Bid Schedule;

B. as provided in paragraph 11.03 of the General Conditions estimated quantities are not guaranteed, and determinations of actual quantities and classification are to be made by ENGINEER as provided in paragraph 9.08 of the General Conditions. Unit prices have been computed as provided in paragraph 11.03 of the General Conditions.

ARTICLE 6 - PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

A. CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

B. Application for Payment performed under this agreement shall be submitted as follows:

➢ Electronically via email to VendorAPInvoices@NashuaNH.gov

OR

➢ Paper Copies via US Mail to:

City of Nashua, City Hall
Accounts Payable
229 Main Street
Nashua, NH 03060

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Please do not submit invoices both electronically and paper copy.

In addition, and to facilitate the proper and timely payment of applications, the OWNER requires that all submitted invoices contain a valid PURCHASE ORDER NUMBER.

6.02 Progress Payments; Retainage

A. Progress Payments. The OWNER will once each month make a progress payment to the CONTRACTOR on the basis of an estimate of the total amount of work done to the time of the estimate and its value as prepared by the CONTRACTOR and approved by the ENGINEER. All such payments will be measured by the schedule of values established in paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

B. Retainage. The OWNER will retain a portion of the progress payment, each month, in accordance with the following procedures:

1. The OWNER will establish an escrow account in the bank of the OWNER'S choosing. The account will be established such that interest on the principal will be paid to the CONTRACTOR. The principal will be the accumulated retainage paid into the account by the OWNER. The principal will be held by the bank, available only to the OWNER, until termination of the contract.

2. Until the work is 50% complete, as determined by the ENGINEER, retainage shall be 10% of the monthly payments claimed. The computed amount of retainage will be deposited in the escrow account established above.

3. After the work is 50% complete, and provided the CONTRACTOR has satisfied the ENGINEER in quality and timeliness of the work, and provided further that there is no specific cause for withholding additional retainage no further amount will be withheld. The escrow account will remain at the same balance throughout the remainder of the project.

6.03 Final Payment

A. Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the General Conditions, OWNER shall hold 2% retainage during the 1 (one) year warranty period and release it only after the project has been accepted.

ARTICLE 7 - CONTRACTOR'S REPRESENTATIONS

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

A. CONTRACTOR has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

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

C. CONTRACTOR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
D. CONTRACTOR has carefully studied all (if any): (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions and (2) reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions.

CONTRACTOR is entitled to rely upon the general accuracy of the “technical data” as provided in paragraph 4.2 of the General Conditions. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR's purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site.

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

F. CONTRACTOR does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Contract Documents.

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

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

J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 8 - CONTRACT DOCUMENTS

8.01 Contents

A. 1. The Contract Documents are defined in Article 1 of the General Condition as amended herein.

2. The Drawings are entitled “Phase III Construction Drawings – Four Hills Landfill, prepared by Sanborn Head & Associates, prepared for the Division of Public Works, City of Nashua, Four Hills Landfill dated December 2017 and revised January 2019, consisting of 25 Sheets”.

ARTICLE 9 - MISCELLANEOUS

9.01 Terms

A. Terms used in this will have the meanings indicated in the General Conditions.
9.02. *Assignment of Contract*

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.03  *Successors and Assigns*

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

9.04  *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

9.05  *Choice of Law and Venue*

A. This agreement shall be governed exclusively by the laws of the State of New Hampshire and any claim or action brought relating to this contract, the work performed or contracted to be performed thereunder, or referable in any way thereto shall be brought in Hillsborough County (New Hampshire) Superior Court Southern Judicial District or in the New Hampshire 9th Circuit Court—Nashua and not elsewhere

**Address for giving notices to Owner:**
Jeff Lefleur, Superintendent  
City of Nashua, Solid Waste Dept  
840 West Hollis Street  
Nashua, NH 03062

**Address for giving notices to Contractor:**
Paul Bertolino, Project Executive  
Charter Contracting Company, LLC  
500 Harrison Avenue, Suite 4R  
Boston, MA 02118
IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

CITY OF NASHUA – OWNER

______________________________
James Donchess, Mayor City of Nashua

Date:__________________________

CONTRACTOR:

By:___________________________
Charter Contracting Company, LLC
(Authorized Representative)

Print Name:_________________________

Date:__________________________

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DIVISION 7
GENERAL CONDITIONS
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## FOR GENERAL CONDITIONS

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

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

2. Agreement--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.

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

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

5. Bid--The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. Bidding Documents--The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

7. Bidding Requirements--The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.

8. Bonds--Performance and payment bonds and other instruments of security.

9. Change Order--A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. Claim--A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. Contract--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. Contract Documents--The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications, the Drawings and the Purchases Order as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Field Orders, and
ENGINEER’s written interpretations and clarifications issued on or after the Effective Date Of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.

13. **Contract Price**--The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).

14. **Contract Times**--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER’s written recommendation of final payment.

15. **CONTRACTOR**--The individual or entity with whom OWNER has entered into the Agreement.

16. **Cost of the Work**--See paragraph 11.01.A for definition.

17. **Drawings**--That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other CONTRACTOR submittals are not Drawings as so defined.

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

19. **ENGINEER**--The individual or entity named as such in the Agreement.

20. **ENGINEER’s Consultant**--An individual or entity having a contract with ENGINEER to furnish services as ENGINEER’s independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

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

22. **General Requirements**--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. **Hazardous Environmental Condition**--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. **Hazardous Waste**--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

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

26. **Liens**--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

27. **Milestone**--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
28. Notice of Award--The written notice by OWNER to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.

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

30. OWNER--The individual, entity, public body, or authority with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be performed.

31. Partial Utilization--Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

32. PCB’s--Polychlorinated biphenyls.

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

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

35. Project Manual--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. 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.

37. Resident Project Representative--The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.

38. 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.

39. 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.

40. Site--Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.

41. Specifications--That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

42. Subcontractor--An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.

43. Substantial Completion--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for
which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.

44. Supplementary Conditions--That part of the Contract Documents which amends or supplements these General Conditions.

45. 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.

46. Underground Facilities--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

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

48. Work--The entire completed construction or the various separately identifiable parts thereof required to be provided in the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

49. Written Amendment--A written statement modifying the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms "as allowed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of ENGINEER as to the Work, it is intended that such action or determination 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 ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.10 or any other provision of the Contract Documents.

B. Day

1. The work "day" shall constitute a calendar day of regular working hours except Saturdays, Sundays and any legal holiday.

C. Defective

1. The word "defective," when modifying the work "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 ENGINEER’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.04 or 14.05).
D. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or ‘Provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

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

E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds

A. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish.

2.02 Copies of Documents

A. OWNER shall furnish to CONTRACTOR up to 5 copies of the Contract Documents as are reasonably necessary for execution of the Work. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence on the day indicated in the Notice to Proceed

2.04 Starting the Work

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

2.05 Before Starting Construction

A. CONTRACTOR’s Review of Contract Documents: Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or reasonably should have known thereof.

B. Preliminary Schedules: Within ten days after the effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for its timely review:

1. A preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
2. A preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and

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

C. Evidence of Insurance: Before any Work at the Site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with Article 5.

2.06 Preconstruction Conference

A. Within 20 days after the Contract times start to run, but before any Work at the Site is started, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.05.B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 Initial Acceptance of Schedules

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.05.B. 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 acceptable schedules are submitted to ENGINEER.

1. The progress schedule will be acceptable to ENGINEER if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR’s full responsibility therefore.

2. CONTRACTOR’s schedule of Shop Drawing and Sample submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.

3. CONTRACTOR’s schedule of values will be acceptable to ENGINEER as to form anc substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

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

B. It is the intent of the Contract documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that 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 provided whether or not specifically called for at no additional cost to OWNER.

C. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in Article 9.
3.02 Reference Standards

A. Standards, Specifications, Codes, Laws, and Regulations

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

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be effective to assign to OWNER, ENGINEER, or any of ENGINEER’s Consultants, agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Document.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. 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 Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by paragraph 6.16A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.04; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

2. In case of discrepancy, calculated dimensions will govern over scaled dimensions, Drawings will govern over Standard Specifications, and Construction Specifications will govern over both Drawings and Standard Specifications. The CONTRACTOR shall take no advantage of any apparent error or omission in the Drawings or Construction Specifications, and the ENGINEER will be permitted to make such corrections and interpretations as may be deemed necessary to fulfill the intent of the Contract Documents.

B. Resolving Discrepancies

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

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

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

3.04 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways: (i) a Written Amendment, or (ii) a Change Order; order  B. The requirements of the Contract Documents may be supplemented and minor variations and
deviations in the Work may be authorized, by one of more of the following ways: (i) a Field Order; (ii) ENGINEER’s approval of a Shop Drawing or Sample; or (iii) ENGINEER’s written interpretation or clarification.

3.05 Reuse of Documents

A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity 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 or bearing the seal of ENGINEER or ENGINEER’s Consultant, including electronic media editions. This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

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

4.01 Availability of Lands

A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR of any encumbrances or restrictions not of general application but specifically related to use of the Site with which CONTRACTOR must comply in performing the Work. OWNER will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CONTRACTOR and OWNER are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in OWNER’s furnishing the Site, CONTRACTOR may make a Claim therefore as provided in paragraph 10.05.

B. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER’s interest therein as necessary for giving notice of or filing a mechanic’s or construction lien against such lands in accordance with applicable Laws and Regulations.

C. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

D. If corporate or private property interferes with the Work, CONTRACTOR shall notify, in writing, the OWNER’s of such property, advising them of the nature of the interference and shall arrange to cooperate with them for the protection or disposition of such property. CONTRACTOR shall furnish the ENGINEER with copies of such notifications and with copies of any agreements between the CONTRACTOR and the property OWNER’s concerning such protection or disposition.

E. CONTRACTOR shall take all necessary precautions for the protection of corporate or private property, such as walls and foundations of buildings, vaults, underground structures of public utilities, underground drainage facilities, overhead structures of public utilities, trees, shrubbery, crops, and fences contiguous to the Work, of which the Contract does not provide for removal. CONTRACTOR shall protect and carefully preserve all official survey monuments, property marks, section markers, and Geological Survey Monuments, or other similar monuments, until OWNER, or authorized Surveyor or agent has witnessed or otherwise referenced their location or relocation. CONTRACTOR shall notify the ENGINEER of the presence of any such survey or property monuments as soon as they are discovered.

F. CONTRACTOR shall be responsible for the damage or destruction of property of any character resulting from neglect, misconduct, or omission in its manner or method of execution or the non-execution of the work, or caused by defective work or the use of unsatisfactory materials, and such responsibility shall not be released until the work shall have been completed and accepted and the requirements of the Construction Specifications complied with.

G. Whenever public or private property is so damaged or destroyed, the CONTRACTOR shall at its own expense, restore such property to a condition equal to that existing before such damage or injury was done by repairing, rebuilding, or replacing it as may be directed, or the CONTRACTOR shall otherwise make good such damage or
destruction in an acceptable manner. If the CONTRACTOR fails to do so, the ENGINEER may, after giving the CONTRACTOR notice in writing, proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof shall be deducted from any compensation due, or which may become due, the CONTRACTOR under its Contract.

4.02 Subsurface and Physical Conditions

A. Reports and Drawings:

1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Contract Documents; and

2. Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Contract Documents.

B. Limited Reliance by CONTRACTOR on Technical Data Authorized:

CONTRACTOR may rely upon the general accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER, or any of ENGINEER’s Consultants with respect to:

1. The completeness of such reports and drawings for CONTRACTOR’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or

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

3. Any CONTRACTOR interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

C. Potential for Hazardous Materials:

Work may include excavation through, and removal of, soils potentially containing undocumented asbestos-containing or other hazardous materials. Should the CONTRACTOR, while performing work under this Contract, uncover hazardous materials, as defined in federal, state and local regulations, he/she shall immediately notify the Engineer. No further disturbance of the area shall occur until the Engineer has collected and analyzed a representative sample of the suspected material. The area shall be cordoned off and covered with 6-mil polyethylene sheeting and await further directions from the Engineer.

4.03 Differing Subsurface or Physical Conditions

A. Notice: If CONTRACTOR believes that any subsurface or physical conditions at or contiguous to the Site that is uncovered or revealed either:

1. Is of such a nature as to establish that any “technical data” on which CONTRACTOR is entitled to rely as provided in paragraph 4.02 is materially inaccurate; or

2. Is of such a nature as to require a change in the Contract Documents; or

3. Differs materially from that shown or indicated in the Contract Documents; or
4. Is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. ENGINEER’s Review: After receipt of written notice as required by paragraph 4.03.A, ENGINEER will promptly review the pertinent condition, determine the necessity of OWNER’s obtaining additional exploration or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER’S findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR’s cost of, or time required for, performance of the Work; subject, however, to the following:

   a. Such condition must meet any one or more of the categories described in paragraph 4.03.A; and

   b. With respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.08 and 11.03.

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

   a. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

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

   c. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.03.A.

3. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefore as provided in paragraph 10.05. However, OWNER, ENGINEER, and ENGINEER’s Consultants shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.04 Underground Facilities

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or ENGINEER by the OWNER’s of such Underground Facilities, including OWNER, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

2. The cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:
a. Reviewing and checking all such information and data,

b. Locating all Underground Facilities shown or indicated in the Contract Documents.

c. Coordination of the Work with the OWNER’s of such Underground Facilities, including OWNER, during construction, and

d. The safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the OWNER of such Underground Facility and give written notice to that OWNER and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility.

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

3. CONTRACTOR shall notify the following underground utility locating service at least three full working days prior to beginning work: Dig Safe System, Inc. 1-800-344-7233.

A list of the major public utilities servicing the work area follows. The list indicates the name and telephone number of the responsible authority of the various utilities which should be notified if conflicts or emergencies arise during the progress of the work.

**Electricity** – Eversource 1-800-662-7764
**Natural Gas** – Liberty Energy 1-603-222-3705
**Water** – Pennichuck Water Works 1-603-882-5191
**Telephone** – Fairpoint Communications 1-603-645-3500
**Cable TV** – Comcast 1-888-633-4266
**Fire Alarm Cable** – Nashua Fire Department 1-603-594-3641

4. At points where the CONTRACTOR’s operations are adjacent to public and private utilities, CONTRACTOR shall not commence work until CONTRACTOR has made all arrangements necessary for the protection of utilities.

5. CONTRACTOR shall coordinate and cooperate with the OWNER’s of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.
4.05 Reference Points

A. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER’s judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 Hazardous Environmental Condition at Site

A. Reports and Drawings: Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the ENGINEER in the preparation of the Contract Documents.

B. Limited Reliance by CONTRACTOR on Technical Data Authorized:  CONTRACTOR may rely upon the general accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER or any of ENGINEER’s Consultants with respect to:

1. The completeness of such reports and drawings for CONTRACTOR’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

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

3. Any CONTRACTOR interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions or information.

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

D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by paragraph 6.16); and (iii) notify OWNER and ENGINEER (and promptly thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. CONTRACTOR shall not be required to resume Work in connection with such condition or in any affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, either party may make a Claim therefore as provided in paragraph 10.05.
F. If after receipt of such written a notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefore as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER’S own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.F shall obligate CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual’s or entity’s own negligence.

H. The provisions of paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

A. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR’s obligations under the Contract Documents. These Bonds 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 Contract Documents.

B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent’s authority to act.

C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.01.B, CONTRACTOR shall within 20 days thereafter substitute another Bond and surety, both of which shall comply with the requirements of paragraphs 5.01.B and 5.02.

5.02 Licenses Sureties and Insurers

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

B. All Sureties and Insurance Companies shall be authorized to do business in the State of New Hampshire and shall have an A.M. Best rating of “A(FSC-VIII)” or better. In the event that the Insurer fails to maintain an A.M. Best rating “A(FSC-VIII)” or better, the CONTRACTOR shall immediately retain a Surety which does meet the above requirements.
5.03 **Certificates of Insurance**

A. CONTRACTOR shall deliver to OWNER 10 days prior to Work, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain.

5.04 **CONTRACTOR’s Liability Insurance**

A. CONTRACTOR shall purchase and maintain such liability and other insurance as is required by OWNER which will provide protection from claims which may arise out of or result from CONTRACTOR’s performance of the Work and CONTRACTOR’s other obligations under the Contract Documents, whether it is to be performed by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

B. The policies of insurance so required by this paragraph 5.04 to be purchased and maintained shall:

1. Include as additional insured (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER.

2. The CONTRACTOR must maintain the following lines of coverage and policy limits for the duration of the contract. Any subcontractors used by the CONTRACTOR are subject to the same coverage and limits and is a subcontractor of the CONTRACTOR and not the OWNER. It is the responsibility of the CONTRACTOR to update Certificates of Insurance during the term of the contract. Provide coverage for not less than the following amounts or greater:

   **General Liability**
   - $1,000,000 per Occurrence
   - $2,000,000 Aggregate
   - City of Nashua Additional Insured

   **Motor Vehicle Liability** *coverage must include all owned, non-owned and hired vehicles.*
   - $1,000,000 Combined Single Limit
   - Automobile Liability
   - City of Nashua Additional Insured

   **Workers’ Compensation Coverage** according to Statute of the State of New Hampshire:
   - $100,000 / $500,000 / $100,000

   All bidders and subcontractors at every tier under the bidder will fully comply with NH RSA Chapter 281-A, “Workers’ Compensation”.

   It is the responsibility of the contractor to submit to the City of Nashua certificates of insurance for all subcontractors prior to the start of the project. It is the responsibility of the contractor to provide the City with updated certificates of insurance for the contractor and all subcontractors 10 days prior to the expiration of coverage. The City may, at any time, order the contractor to stop work, suspend the contract or terminate the contract for non-compliance. All subcontractors are subject to the same insurance requirements as the contractor.

3. Include completed operations insurance;

4. Include contractual liability insurance covering CONTRACTOR’s indemnity obligations under paragraphs 6.07, 6.11, and 6.20;

5. Contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has
been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.03 will so provide);

6. Remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with paragraph 13.07; and

7. With respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

C. CONTRACTOR agrees to maintain all required insurance coverage throughout the entire term of the contract. If CONTRACTOR does not maintain coverage throughout the entire term of the contract, CONTRACTOR agrees that OWNER may, at any time the coverage is not maintained by CONTRACTOR, order the CONTRACTOR to stop work, suspend the contract, or terminate the contract. CONTRACTOR further agrees, if applicable, as a precondition to the performance of any work under this contract and as a precondition to any obligation of the OWNER to make any payment under this contract to provide the OWNER with a certificate of a qualified insurer.

5.05 Property Insurance

A. CONTRACTOR must purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost of the Work. This insurance shall:

1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER’s Consultants and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

3. cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that the materials and equipment have been included in an application for payment recommended by ENGINEER; and

4. allow for partial utilization of the Work by OWNER;

5. include testing and startup; and

6. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR and ENGINEER with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. CONTRACTOR shall be responsible for any deductible or self-insured retention. The risk of loss within the identified deductible amount will be borne by CONTRACTOR, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser’s own expense. OWNER shall not be responsible for purchasing and maintaining any property insurance specified in this paragraph 5.06 to protect the interests of CONTRACTOR, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions.

C. All the policies of insurance (and the certificates or other evidence of the policy) required to be purchased and maintained in accordance with paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days after written notice has been given to
OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.07.

5.06 Waiver of Rights

A. CONTRACTOR intends that all policies purchased in accordance with paragraph 5.06 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER’s Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered by the policy. All CONTRACTOR policies must contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insured or additional insured there under. CONTRACTOR waive all rights against OWNER each other and their respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER’s Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) under such policies for losses and damages so caused.

ARTICLE 6 - CONTRACTOR’S RESPONSIBILITIES

6.01 Supervision and Superintendence

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of OWNER or ENGINEER in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent thereto who shall not be replaced without written notice to OWNER and ENGINEER 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 given to or received from the superintendent shall be binding on CONTRACTOR.

6.02 Labor; Working Hours

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

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday, or any legal holiday without OWNER’s written consent (which will not be unreasonably withheld) given after prior written notice to ENGINEER.

6.03 Services, Materials, and Equipment

A. Unless otherwise specified in the General Requirements, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools,
appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 Progress Schedule

A. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.07 as it may be adjusted from time to time as provided below.

1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.07) proposed adjustments in the progress schedule that will not result in changing the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.05 Substitutes and “Or-Equals”

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or “or-equal” item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below.

1. “Or-Equal” Items:

If in ENGINEER’S sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an “or-equal” item, in which case review and approval of the proposed item may, in ENGINEER’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. In the exercise of reasonable judgment ENGINEER determines that: (i) it is at least equal in quality, durability, appearance, strength, and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and;

b. CONTRACTOR certifies that: (i) there is no increase in cost to the OWNER; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in ENGINEER’s sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an “or-equal” item under paragraph 6.05.A.1, it will be considered a proposed substitute item.
b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

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

d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use. The application shall certify that the proposed substitute item 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 use of the proposed substitute item will prejudice CONTRACTOR’s achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item.

B. 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 approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER’s sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.05.A.2.

C. Engineer’s Evaluation: ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.05.A and 6.05.B. ENGINEER will be the sole judge of acceptability. No “or equal” or substitute will be ordered, installed or utilized until ENGINEER’s review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop drawing for an “or equal”. ENGINEER will advise CONTRACTOR in writing of any negative determination.

D. Special Guarantee: OWNER may require CONTRACTOR to furnish at CONTRACTOR’s expense a special performance guarantee or other surety with respect to any substitute.

E. ENGINEER’s Cost Reimbursement: ENGINEER will record time required by ENGINEER and ENGINEER’s Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.05.A.2 and 6.05.B 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. Whether or not ENGINEER approves a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER’s Consultants for evaluating each such proposed substitute.

F. CONTRACTOR’s Expense: CONTRACTOR shall provide all data in support of any proposed substitute or “or equal” at CONTRACTOR’s expense.

6.06 Concerning Subcontractors, Suppliers, and Others

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

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to OWNER in advance for acceptance by OWNER by a specified date prior to the Effective Date of the Agreement, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER’s acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of OWNER or ENGINEER to reject defective work.

C. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as CONTRACTOR is responsible for CONTRACTOR’s own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

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

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

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in divvicing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.06, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER’s Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.07 Patent Fees and Royalties

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to
others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees or 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 or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 Permits

A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility Owner's for capital costs related thereto, such as plant investment fees.

6.09 Laws and Regulations

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

B. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work; however, it shall not be CONTRACTOR's primary responsibility to make certain the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided in paragraph 10.05.

D. CONTRACTOR shall comply with all local laws, ordinances, and statutes, all provisions of the Revised Statutes Annotated, all provisions of the federal Davis-Bacon Act for projects with federal funding, and all regulations promulgated under either statute. Copies of the "City of Nashua Prevailing Wage Rates for Public Works", as determined by U.S. Department of Labor and "General Wage Determinations," as determined by the U.S. Department of Labor, are available for inspection at the City of Nashua Division of Public Works, 9 Riverside Street, Nashua, New Hampshire. If the provisions of the Davis-Bacon Act apply, all employees of the CONTRACTOR must be paid not less than the wage which is the greater of the Federal wage determinations. The hourly and daily rate of wages to be paid each class of mechanics and workers must be posted on the project site in a place generally visible to the employees.

E. If the Davis-Bacon Act applies, CONTRACTOR shall furnish to the OWNER within seven days after payment date of the weekly payroll period, a statement of wages paid for each of the CONTRACTOR's employees or a payroll report. If the Davis-Bacon Act applies, CONTRACTOR shall furnish to the OWNER within seven days after payment date of the weekly payroll period, a statement of wages paid for each of any subcontractor's employees or a payroll report for each subcontractor. The statement or report must include the CONTRACTOR's certification of compliance with the requirements of the supplementary condition. CONTRACTOR agrees that failure to comply with the portion of this supplementary condition requiring CONTRACTOR to furnish a certified statement of wages or payroll report will, in addition to any other retention allowed under this contract or under state or federal law, allow the OWNER to
unilaterally, without notice to CONTRACTOR, retain an amount of up to 10% from each progress payment until the OWNER determines CONTRACTOR has complied with the provisions of this supplementary condition.

F. If the Davis-Bacon Act applies to work to be performed under this contract, CONTRACTOR shall furnish to the OWNER within seven days after payment date of the weekly payroll period, a statement of wages paid for each of CONTRACTOR's employees and for each of any subcontractor's employees or a payroll report from CONTRACTOR and from each subcontractor. Each statement or report must include the certification by CONTRACTOR of compliance with the provisions of the Davis-Bacon Act.

G. Workers' Compensation Coverage.

1. CONTRACTOR agrees as a precondition to the performance of any work under this contract and as a precondition to any obligation of the OWNER to make any payment under this contract to provide the OWNER with a certificate of a qualified insurer. CONTRACTOR agrees that notice of any lapse in coverage or nonpayment of coverage that the CONTRACTOR is required to maintain should be mailed to:

Risk Management
City of Nashua
229 Main Street
Nashua, NH 03060

2. CONTRACTOR agrees to maintain required workers' compensation coverage throughout the entire term of the contract. If CONTRACTOR does not maintain coverage throughout the entire term of the contract, CONTRACTOR agrees that OWNER may, at any time the coverage is not maintained by CONTRACTOR, order the CONTRACTOR to stop work, suspend the contract, or terminate the contract. For each six-month period this contract is in effect, CONTRACTOR agrees, prior to the expiration of the six-month period, to provide another written request to its insurer for the provision of a certificate and notice of lapse in or nonpayment of coverage. If CONTRACTOR does not make the request or does not provide the certificate before the expiration of the six-month period, CONTRACTOR agrees that OWNER may order the CONTRACTOR to stop work, suspend the contract, or terminate the contract.

H. To be deemed a responsive bid, the list of subcontractor form must be submitted even if no subcontractors are required to be listed. Submittal is as follows:

1. Each bid submitted to any officer, department, board or commission for the construction of any public work or improvement must include:
   
a. The name of each subcontractor who will provide labor or a portion of the work or improvement to the CONTRACTOR for which he will be paid an amount exceeding 5 percent of the prime CONTRACTOR's total bid. Within 2 hours after the completion of the opening of the bids, the general contractors who submitted the three lowest bids must submit a list of the name of each subcontractor who will provide labor or a portion of the work or improvement to the CONTRACTOR for which he will be paid an amount exceeding 1 percent of the prime CONTRACTOR's total bid or $50,000, whichever is greater, and the number of the license issued to the subcontractor. If a general CONTRACTOR fails to submit such a list within the required time, his bid shall be deemed not responsive.
   
b. A description of the portion of the work or improvement which each subcontractor named in the bid will complete.

2. The CONTRACTOR shall list in his bid the name of a subcontractor for each portion of the project that will be completed by a subcontractor.
3. A CONTRACTOR whose bid is accepted shall not substitute any person for a subcontractor who is named in the bid, unless:

   a. The awarding authority objects to the subcontractor, requests in writing a change in the subcontract and pays any increase in costs resulting from the change; or

   b. The substitution is approved by the awarding authority and:

      (i) The subcontractor, after having a reasonable opportunity, fails or refuses to execute a written contract with the CONTRACTOR which was offered to the subcontractor with the same terms that all other subcontractors on the project were offered;

      (ii) The named subcontractor files for bankruptcy or becomes insolvent; or

      (iii) The named subcontractor fails or refuses to perform his subcontract within a reasonable time or is unable to furnish a performance bond and payment bond.

I. If blasting or use of explosives is necessary for prosecution of Work, the CONTRACTOR shall provide the ENGINEER with a blasting plan in compliance with OSHA, State, and local regulations, laws, ordinances, and requirements. CONTRACTOR shall exercise the utmost care not to endanger life or property. CONTRACTOR shall be responsible for all damage resulting from the use of explosives. CONTRACTOR shall notify each property OWNER and utility company having structures or facilities in proximity to the site of the work of its intentions to use explosives. Such notice shall be given sufficiently in advance to enable the utility companies to take such steps as they may deem necessary to protect their property from injury.

6.10 Taxes

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

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the OWNER or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such OWNER or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

B. Removal of Debris During performance of the Work:

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

C. Cleaning:

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

D. Loading Structures:

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

E. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER’s Consultant, and the officers, directors, partners, 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 or relating to any claim or action, legal or equitable, brought by any such OWNER or occupant against OWNER, ENGINEER, or any other party indemnified hereunder to the extent caused by or based upon: CONTRACTOR’s performance of the Work.

6.12 Record Documents

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to ENGINEER for OWNER.

B CONTRACTOR shall mark up one set of paper prints to show the As-built conditions. They shall include all the information shown on the Contract Drawings and a record of all deviations, modifications, or changes from those Drawings, however minor, which were incorporated in the Work, all additional work not appearing on the Contract Drawings and all changes which are made after final inspection of the Contract Work. These As-built marked prints shall be kept current and available on the job site at all times. All changes from the Contract Drawings which are made in the Work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. No construction work shall be concealed until it has been inspected, approved, and recorded. The As-built marked prints will be jointly inspected for accuracy and completeness by the ENGINEER’S representative and a responsible representative of the CONTRACTOR prior to submission of the monthly pay estimate. Failure to keep the As-built marked prints on a current basis shall be sufficient justification to suspend pay estimates. The drawings shall show the following information, but not be limited to:

1. The location of any utility lines or other installations of any kind or description known to exist within the construction area. The location includes dimensions of permanent features.

2. The location and identification of all surface installations within 100 feet of the construction work.

3. The location and dimensions of any changes within the building or structure.

4. Correct grade or alignment of roads, structures, or utilities if any changes were made from Contract Drawings.

5. Correct elevations if changes were made in site grading.

6. Changes in details or design or additional information obtained from working drawings specified to be prepared or furnished by the CONTRACTOR including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions or equipment foundations, etc.

7. The topography and grades of all drainage installed or affected as a part of the Work.
8. All changes or modifications which result from the final inspection.

The As-built marked prints shall be delivered to the ENGINEER at the time of final inspection for ENGINEER's review and approval. All approval and acceptance of As-built drawings shall be accomplished before final payment is made to the CONTRACTOR.

6.13 Safety and Protection

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. All persons on the Site or who may be affected by the Work;

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

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

B. CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify OWNER of adjacent property and of Underground Facilities and other utility Owner's 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 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER'S Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

C. Occupational Safety and Health Standards: CONTRACTOR's methods of construction and safety requirements, including but not limited to trench excavation and shoring where applicable, shall conform to the requirements of the Occupational Safety and Health Standards for the Construction Industry. The document entitled "Occupational Safety and Health Standards for the Construction Industry" (29 CFR PART 1926) with Amendments as of February 1, 1998, including 29 CFR part 1910 General Industry Safety and Health Standards Applicable to Construction, is not attached to the Contract Documents. Said requirements as identified and established above are incorporated herein by reference.

D. Power Lines: No equipment of any kind shall be used or permitted within such proximity to the conductors of the Public Services of New Hampshire power lines as to be in violation of the safe working clearance prescribed by the National Electrical Safety Code.

E. Protection of Utilities: The CONTRACTOR shall verify all utility locations prior to the start of construction. This shall include, but not necessarily limited to: irrigation and drainage ditches, culverts, water lines, sewer lines, telephone cables, cable television, gas lines and electric lines. Prior to the start of construction the CONTRACTOR shall call Dig Safe System, Inc. 1-800-344-7233 (two full working days’ notice required). The failure of any utility to subscribe to DIGS shall not relieve the CONTRACTOR from the responsibility of protection of that utility on the site. Any physical structure (i.e. curbs, sidewalks, paving, buildings, landscape improvements, utilities, etc., damaged by the
CONTRACTOR shall be repaired or replaced in a condition equal to or better than the condition prior to the damage. Such repair or replacement shall be accomplished at the CONTRACTOR's expense without additional compensation from the OWNER.

F. CONTRACTOR shall ensure that its activities and activities of its employees, agents and subcontractors, and their employees and agents (including all sub-subcontractors), are in strict compliance with all Environmental Protection Agency, New Hampshire Department of Environmental Services, and Department of Transportation regulations and all other applicable federal, state and local statutes, ordinances, regulations and rules, including without limitation, the Federal Occupational Safety and Health Act of 1970 (OSHA) as amended and the standards and regulations issued thereunder, and all other statutes, ordinances, regulations, rules, standards and requirements of common law in relation to industrial hygiene and safety, and the protection of health and the environment.

6.14 Safety Representative

A. CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs. Work Site is subject to safety inspection by the City Safety Representative at any and all times.

6.15 Hazard Communication Programs

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

6.16 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, Change Order will be issued.

6.17 Shop drawings and Samples

A. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. 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 ENGINEER the services, materials, and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.17.E.

B. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with the acceptable 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 ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.17.E. The numbers of each Sample to be submitted will be as specified in the Specifications.

C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER as required by paragraph 2.07, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.
D. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:
   
a. All field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

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

   c. All information relative to means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto; and

   d. 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.

2. Each submittal shall 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.

3. At the time of each submittal, CONTRACTOR shall give ENGINEER 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 to ENGINEER for review and approval of each such variation.

E. ENGINEER’s Review

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

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

3. ENGINEER’s review and approval 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 ENGINEER’s attention to each such variation at the time of each submittal as required by paragraph 6.17.D.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.17.D.1.

F. Resubmittal Procedures

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

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.04 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.19 CONTRACTOR’s General Warranty and Guarantee

A. CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER’s Consultants 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:

1. Abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or

2. Normal wear and tear under normal usage.

B. CONTRACTOR’s obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR’s obligation to perform the Work in accordance with the Contract Documents:

1. Observations by ENGINEER;

2. Recommendation by ENGINEER or payment by OWNER OF ANY PROGRESS OR FINAL PAYMENT;

3. The issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereof by OWNER;

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

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

6. Any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER;

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

8. Any correction of defective Work by OWNER.

6.20 Indemnification

A. Regardless of the coverage provided by any insurance, Contractor agrees to indemnify and shall defend and hold harmless the City, its agents, officials, employees and authorized representatives and their employees from and against any and all suits, causes of action, legal or administrative proceedings, arbitrations, claims, demands, damages, liabilities, interest, attorneys’ fees, costs and expenses of any kind or nature in any manner caused, occasioned, or contributed to in whole or in part by reason of any negligent act, omission, or fault or willful misconduct, whether active or passive, of Contractor or of anyone acting under its direction or control or on its behalf in connection with or incidental to the performance of this contract. Contractor’s indemnity, defense and hold harmless obligations, or portions thereof, shall not apply to liability caused by the sole negligence or willful misconduct of the party indemnified or held harmless.

B. In any and all claims against OWNER or ENGINEER, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or
anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity.

C. The indemnification obligations of CONTRACTOR under paragraph 6.20.A shall not extend to the liability of ENGINEER and ENGINEER’s Consultants or to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them arising out of: The preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications.

**ARTICLE 7 - OTHER WORK**

**7.01 Related Work at Site**

A. OWNER may perform other work related to the Project at the Site by OWNER’s employees, or let other direct contracts therefore, or have other work performed by utility Owner’s. If such other work is not noted in the Contract Documents, then:

1. Written notice thereof will be given to CONTRACTOR prior to starting any such other work; and

2. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefore as provided in paragraph 10.05.

B. 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 other 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 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 properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility OWNERS and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility OWNERS and other contractors.

C. If the proper execution or results of any part of CONTRACTOR’s Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR’s Work. CONTRACTOR’s failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR’s Work except for latent defects and deficiencies in such other work.

**7.02 Coordination**

A. If OWNER intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. The individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

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

3. The extent of such authority and responsibilities will be provided.
B. Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility for such coordination.

**ARTICLE 8 - OWNER'S RESPONSIBILITIES**

**8.01 Communications to Contractor**  
A. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

**8.02 Replacement of ENGINEER**  
A. In case of termination of the employment of ENGINEER, OWNER shall appoint and whose status under the Contract Documents shall be that of the former ENGINEER.

**8.03 Furnish Data**  
A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

**8.04 Pay Promptly When Due**  
A. OWNER shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.02.C and 14.07.C.

**8.05 Lands and Easements; Reports and Tests**  
A. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by ENGINEER in preparing the Contract Documents.

**8.06 Insurance**  
See Article 5.

**8.07 Change Orders**  
A. OWNER is obligated to execute Change Orders as indicated in paragraph 10.03.

**8.08 Inspections, Tests, and Approvals**  
A. OWNER's responsibility in respect to certain inspections tests, and approvals is set forth in paragraph 13.03.B.

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

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

8.11 Evidence of Financial Arrangements

A. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 OWNER's Representative

A. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and will not be changed without written consent of OWNER and ENGINEER.

9.02 Visits to Site

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER's visits and observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.10, and particularly, but without limitation, during or as a result of ENGINEER's visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

9.03 Project Representative

A. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.10 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the Site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereof of such other individual or entity will be as provided in the supplementary Conditions.

9.04 Clarifications and Interpretations

A. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the
amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, a Claim may be made therefore as provided in paragraph 10.05.

9.05 Authorized Variations in Work

A. ENGINEER may authorize minor variations in the Work from the requirements of the Contract documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, who shall perform the Work involved promptly. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefore as provided in paragraph 10.05.

9.06 Rejecting Defective Work

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

9.07 Shop Drawings, Change Orders and Payments

A. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraph 6.17.

B. In connection with ENGINEER's authority as to change orders, see Articles 10, 11, and 12.

C. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

9.08 Determinations for Unit Price Work

A. ENGINEER will have authority to determine the actual quantities and classifications of items of Unit Price Work performed by CONTRACTOR, and the written decisions of ENGINEER on such matters will be final, binding on OWNER and CONTRACTOR and not subject to appeal (except as modified by ENGINEER to reflect changed factual conditions).

9.09 Decisions on Requirements of Contract Documents and Acceptability of Work

A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work there under. Claims, disputes and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the interpretation of the requirements of the Contract documents pertaining to the performance of the Work, and Claims seeking changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing in accordance with the provisions of paragraph 10.05, with a request for a formal decision.

B. When functioning as interpreter and judge under this paragraph 9.09, ENGINEER will not be liable in connection with any interpretation or decision rendered in such capacity. The rendering of a decision by ENGINEER pursuant to this paragraph 9.09 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 14.07) 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.
9.10 Limitations on ENGINEER's Authority and Responsibilities

A. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

C. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates or inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this paragraph 9.10 shall also apply to ENGINEER's Consultants, Resident Project Representative, and assistants.

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ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 Authorized Changes in the Work

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

B. If OWNER and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Change Order, a Claim may be made therefore as provided in paragraph 10.05.

10.02 Unauthorized Changes in the Work

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

10.03 Execution of Change Orders

A. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

1. Changes in the Work which are: (i) ordered by OWNER pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under paragraph 13.08.A or OWNER's correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;
2. Changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Change Order; and

3. Changes in the Contract Price and Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.18.A.

10.04 Notification to Surety

A. If 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. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.05 Disputes – Not Insurance Related

A. Notice: Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to ENGINEER and the other party to the Contract promptly (but in no event later than 10 days) after the start of the event giving rise thereto. Notice of the amount or extent of the dispute, or other matter with supporting data shall be delivered to the ENGINEER, Risk Management Department and the other party to the Contract within 60 days after the start of such event. A dispute for an adjustment in Contract Price shall be prepared in accordance with the provisions in paragraph 12.01.B. A dispute for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each dispute shall be accompanied by claimant's written statement that the adjustment disputed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to ENGINEER and the claimant within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).

B. ENGINEER'S Decision: ENGINEER will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. ENGINEER's written decision on such dispute, or other matter will be final and binding upon CONTRACTOR unless:

1. An appeal from ENGINEER'S decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16; or

2. If no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to appeal from ENGINEER's written decision is delivered by CONTRACTOR to the other and to ENGINEER within 30 days after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by OWNER and CONTRACTOR), to exercise such rights or remedies as the appealing party may have the respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If ENGINEER does not render a formal decision in writing within the time stated in paragraph 10.05.B, a decision denying the dispute in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the submittal of the opposing party, if any.

D. No dispute for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this paragraph 10.05.
ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

A. Costs Included: The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of the Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs of employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by OWNER.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

3. Payments made by CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER, who will then determine, with the advice of ENGINEER, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in this paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

   a. The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.

   c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
6. Rental rates shall be determined as follows:

a. The base rates shall be those established in publications and revisions thereto entitled “Rental Rate Blue Book for Construction Equipment” or the “Rental Rate Blue Book for Older Construction Equipment” as published by K-III, 1735 Technology Drive, Suite 401, San Jose, CA 95110-1313, Phone (408) 467-6700.

b. Attachments (e.g. tractor with ripper and dozer or tractor with loader and backhoe) will be included in the hourly rental rate only when deemed essential to the work as determined the Engineer. When multiple attachments are approved for use and are being used interchangeably, the attachment having the higher rental rate shall be the only one included for payment.

c. No direct payment will be made for necessary accessories (including replenishing blades, augers, teeth, hoses, bits, etc.) if not listed in the Rental Rate Blue Book.

d. No compensation will be allowed for shop tools having a daily rental rate of less than $10 as set forth in Section 18 of the Rental Rate Blue Book.

   i. If ordered to use equipment not listed in the aforementioned publications, the Engineer will establish a rental rate for such equipment. CONTRACTOR shall furnish cost data that might assist in the establishment of such rental rate.

   ii. Payment will be made for the actual time that such equipment is in operation on the work.

   iii. Authorized standby time for idle equipment shall be paid at 50% of the specified rate, less the estimated operating cost per hour. No markup will be added for overhead and profit.

   iv. Rental rate paid as above provided shall include the cost of fuel, oil, lubrication, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance and all incidentals. CONTRACTOR shall provide the Engineer with a complete Force Account Equipment Listing for each piece of equipment utilized.

e. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

f. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

g. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance of the Work, provided such losses and damages have resulted from 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. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR’s fee.

h. The cost of utilities, fuel, and sanitary facilities at the Site.

i. 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.

j. When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional Bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.
k. When all the Work is performed on the basis of cost-plus, the costs of premiums for all Bonds and insurance CONTRACTOR is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site.

3. Any part of CONTRACTOR's capital expense, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

4. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overheard or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.

C. CONTRACTOR's Fee: When all the Work is performed on the basis of cost-plus, CONTRACTOR's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, CONTRACTOR's fee shall be determined as set forth in paragraph 12.01.C.

D. Documentation: Whenever the cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A. and 11.01.B, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to ENGINEER as itemized cost breakdown together with supporting data.

11.02 Cash Allowances

A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

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

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 payment on account of any of the foregoing will be valid.

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

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of the Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER subjects to the provisions of paragraph 9.08.

B. 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.

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

12.01 Change of Contract Price

A. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 12.01.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents an agreement to a lump sum is not reached under paragraph 12.01.B.2, on the basis of the cost of the Work (determined as provided in paragraph 11.01) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 12.01.C).

C. CONTRACTOR's Fee: The CONTRACTOR's fee for overhead and profit shall be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

   a. For costs incurred under paragraphs 11.01.A.1 and 11.01.A.2, the CONTRACTOR's fee shall be 15 percent;

   b. For costs incurred under paragraph 11.01.A.3, the CONTRACTOR's fee shall be five percent;

   c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2.a. is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

   d. No fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
e. The amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and

f. When both addition and credits are involved in any one change, the adjustment in CONTRACTOR’s fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.2.a through 12.01.C.2.e inclusive.

12.02 Change of Contract Times

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on written notice submitted by the party making the claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. Any adjustment of the contract Times (or Milestones) covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones) will be determined in accordance with the provisions of this Article 12.

12.03 Delays beyond CONTRACTOR's Control

A. 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 Claim is made therefore as provided in paragraph 12.02.A. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

12.04 Delays within CONTRACTOR’s Control

A. Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05 Delays beyond OWNER's and CONTRACTOR's Control

A. 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.

12.06 Delay Damages

A. In no event shall OWNER or ENGINEER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. Delays caused by or within the control of CONTRACTOR; or

2. Delays beyond the control of both OWNER and CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.
B. Nothing in this paragraph 12.06 bars a change in Contract Price pursuant to this Article 12 to compensate CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inactions of OWNER or anyone from whom OWNER is responsible.

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

**13.01 Notice of Defects**

A. Prompt notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

**13.02 Access to Work**

A. OWNER, ENGINEER, ENGINEER'S Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interest will have access to the Site and 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.

**13.03 Tests and Inspections**

A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. For inspections, tests, or approvals covered by paragraphs 13.03.C and 13.03.D below;

2. That costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.B; and

3. As otherwise specifically provided in the Contract Documents.

4. That costs incurred by OWNER due to retesting, reinspection, or standby time due to unacceptable materials, or workmanship provided by the CONTRACTOR, or due to poor scheduling by the CONTRACTOR of tests of inspections, will be deducted from the payments to the CONTRACTOR. CONTRACTOR shall stop work as necessary to allow for inspections and tests by OWNER and ENGINEER.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval.

D. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for OWNER'S and ENGINEER's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to OWNER and ENGINEER.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.
F. Uncovering Work as provided in paragraph 13.03.E shall be at CONTRACTOR’s expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR’s intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

G. The OWNER intends to provide inspection for the project. The inspector will be available during a forty (40) hour period during the week from Monday through Friday. In the event the CONTRACTOR receives permission from the OWNER and elects to work more than forty hours during the week or more than 10 hours in one day, or on a Saturday, Sunday, or legal holiday, the CONTRACTOR shall be responsible for all inspection, engineering and testing costs incurred during that period. For all inspection and testing work performed on Saturday, Sunday, or legal holidays, the minimum chargeable time shall be four (4) hours. The OWNER reserves the right to deduct these inspection, engineering, and testing costs directly from the CONTRACTOR’S payments.

13.04 Uncovering Work

A. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR’S expense.

B. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefore as provided in paragraph 10.05. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefore as provided in paragraph 10.05.

13.05 OWNER May Stop the Work

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause of such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by ENGINEER, remove it from the Project and replace it with Work that is not defective. CONTRACTOR shall pay all Claims, costs, losses, damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.07 Correction Period

A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by 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, or if the repair of any damages to the land or areas made available for CONTRACTOR's use by OWNER or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) repair such defective land or areas, or (ii) correct such defective Work or, if the defective Work has been rejected by OWNER, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting there from. 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, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement work of others) will be paid by CONTRACTOR.

B. 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 Written Amendment.

C. Where defective Work (and damage to other Work resulting there from) has been corrected or removed and replaced under this paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

D. CONTRACTOR's obligations under this paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, ENGINEER) prefers to accept it, OWNER may do so, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by CONTRACTOR pursuant to this sentence. If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefore as provided in paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

13.09 OWNER May Correct Defective Work

A. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.06.A, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days written notice to CONTRACTOR, correct and remedy any such deficiency.

B. In exercising the rights and remedies under this paragraph, OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other
contractors, and ENGINEER and ENGINEER's Consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.

C. All Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by OWNER in exercising the rights and remedies under this paragraph 13.09 will be charged against CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, OWNER may make a Claim therefore as provided in paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR's defective Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

A. The schedule of values established as provided in paragraph 2.01.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payment

A. Review of Applications.

1. Prior to submittal of Application for Payment to OWNER (but not more often than once a month), the CONTRACTOR shall submit the monthly progress estimate to the ENGINEER for review and approval.

2. ENGINEER will, within 10 working days after receipt of each progress estimate, either indicate in writing a recommendation of payment or indicate in writing ENGINEER's reasons for refusing to recommend payment and return the progress estimate to CONTRACTOR. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

3. ENGINEER's recommendation of any payment requested in a progress estimate will constitute a representation by ENGINEER to OWNER, based on ENGINEER's observations on the Site of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying date and schedules, that to the best of ENGINEER's knowledge, information and belief:

   a. The Work has progressed to the point indicated;

   b. The quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.08 and to any other qualifications stated in the recommendation); and

   c. The conditions precedent to CONTRACTOR's being entitled to such payment appears to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

4. By recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents; or (ii) that there may not be other
matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

5. Neither ENGINEER's review of CONTRACTOR's Work for the purposes of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work. Additionally, said review or recommendation will not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any Liens.

6. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.02.B.2. ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

a. The Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. The Contract Price has been reduced by Written Amendment or Change Orders;

c. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.09; or

d. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A.

B. Applications for Payments.

1. CONTRACTOR shall submit to OWNER the ENGINEER recommended Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect OWNER's interest therein, all of which must be satisfactory to OWNER. Any request for partial or final payment shall specifically list the work completed. To facilitate the proper and timely payment of applications, the OWNER requires that all applications must reference a valid PURCHASE ORDER NUMBER, as submitted to CONTRACTOR under the Notice to Proceed, be in original format; OWNER will not authorize payments from carbon or Xerox copies, and mailed directly to the following address:

    City of Nashua
    Accounts Payable
    PO Box 2019
    Nashua, NH 03061-2019
    Attn: Division of Public Works

2. Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied on account to discharge CONTRACTOR's legitimate obligations associated with prior Applications for Payment.

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

C. Payment Becomes Due
1. Not more than 30 days after presentation of the application for payment to OWNER with ENGINEER’s recommendation, the amount recommended will become due, and when due will be paid by OWNER to CONTRACTOR.

D. Reduction in Payment.

1. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

   a. Claims have been made against OWNER on account of CONTRACTOR’s performance or furnishing of the Work;

   b. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens;

   c. There are other items entitling OWNER to a set-off against the amount recommended; or

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

2. If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER’s satisfaction the reasons for such action.

3. If it is subsequently determined that OWNER’s refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

14.03 CONTRACTOR’S Warranty of Title

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

14.04 Substantial Completion

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Promptly thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefore. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within 14 days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefore. If after consideration of OWNER’s objections, ENGINEER considers the Work substantially complete, ENGINEER will within said 14 days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation to division of responsibilities pending final payment between OWNER and
CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

B. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

14.05 Partial Utilization

A. Use by OWNER at OWNER's option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.

1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after such request, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, the provisions of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

2. No occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of paragraph 5.10 regarding property insurance.

14.06 Final Inspection

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

14.07 Final Payment

A. Application for Payment

1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.04.B.7; (ii) consent of the surety, if any, to final payment; and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases
and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER 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 OWNER to indemnify OWNER against any lien.

B. Review of Application and Acceptance

1. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application of Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application for Payment to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to OWNER of the Application for Payment and accompanying documentation, the amount recommended by ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

14.08 Final Completion Delayed

A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

A. The making and acceptance of final payment will constitute:

1. A waiver of all Claims by CONTRACTOR against OWNER other than those previously made in writing which are still unsettled.

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ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 Termination, Abandonment, or Suspension at Will

The OWNER, in its sole discretion, shall have the right to terminate, abandon, or suspend all or part of the project and contract at will. If the OWNER chooses to terminate, abandon, or suspend all or part of the project, it shall provide CONTRACTOR 10 day's written notice of its intent to do so.

If all or part of the project is suspended for more than 90 days, the suspension shall be treated as a termination at will of all or part of the project and contract.

Upon receipt of notice of termination, abandonment, or suspension at will, CONTRACTOR shall:
1. Immediately discontinue work on the date and to the extent specified in the notice.

2. Place no further orders or subcontracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.

3. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the OWNER of all orders or subcontracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the OWNER any orders or subcontracts specified in the notice, and revoke agreements specified in the notice.

4. Not resume work after the effective date of a notice of suspension until receipt of a written notice from the OWNER to resume performance.

In the event of a termination, abandonment, or suspension at will, CONTRACTOR shall receive all amounts due and not previously paid to CONTRACTOR for work satisfactorily completed in accordance with the contract prior to the date of the notice and compensation for work thereafter completed as specified in the notice. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work.

15.02 Termination for Cause

This agreement may be terminated by the OWNER on 10 calendar day’s written notice to CONTRACTOR in the event of a failure by CONTRACTOR to adhere to any or all the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the OWNER, to complete or make sufficient progress on the work in a timely and professional manner. CONTRACTOR shall be given an opportunity for consultation with the OWNER prior to the effective date of the termination. CONTRACTOR may terminate the contract on 10 calendar days written notice if, through no fault of CONTRACTOR, the OWNER fails to pay CONTRACTOR for 45 days after the date of approval by the OWNER of any Application for Payment.

Upon receipt of notice of termination for cause, CONTRACTOR shall:

1. Immediately discontinue work on the date and to the extent specified in the notice.

2. Provide the OWNER with a list of all unperformed services.

3. Place no further orders or subcontracts for materials, services, or facilities, other than as may be necessary or required for completion of such portion of work under the contract that is not terminated.

4. Immediately make every reasonable effort to obtain cancellation upon terms satisfactory to the OWNER of all orders or sub contracts to the extent they relate to the performance of work terminated, abandoned, or suspended under the notice, assign to the OWNER any orders or sub contracts specified in the notice, and revoke agreements specified in the notice.

5. Not resume work after the effective date of a notice of termination unless and until receipt of a written notice from the OWNER to resume performance.

In the event of a termination for cause, CONTRACTOR shall receive all amounts due and not previously paid to CONTRACTOR for work satisfactorily completed in accordance with the contract prior to the date of the notice, less all previous payments. No amount shall be allowed or paid for anticipated profit on unperformed services or other unperformed work. Any such payment may be adjusted to the extent of any additional costs occasioned to the OWNER by reasons of CONTRACTOR’s failure. CONTRACTOR shall not be relieved of liability to the OWNER for damages sustained from the failure, and the OWNER may withhold any payment to the CONTRACTOR until such time as the exact amount of damages due to the OWNER is determined. All claims for payment by the CONTRACTOR must be submitted to the OWNER within 30 days of the effective date of the notice of termination.

If after termination for the failure of CONTRACTOR to adhere to any of the terms and conditions of the contract or for failure to satisfactorily, in the sole opinion of the OWNER, to complete or make sufficient progress on the work in a timely and professional manner, it is determined that CONTRACTOR had not so failed, the termination shall be deemed to have been a termination at will. In that event, the OWNER shall, if necessary, make an adjustment in the
compensation paid to CONTRACTOR such that CONTRACTOR receives total compensation in the same amount as it would have received in the event of a termination-at-will.

15.03 General Provisions for Termination

Upon termination of the contract, the OWNER may take over the work and prosecute it to completion by agreement with another party or otherwise. In the event CONTRACTOR shall cease conducting business, the OWNER shall have the right to solicit applications for employment from any employee of the CONTRACTOR assigned to the performance of the contract.

Neither party shall be considered in default of the performance of its obligations hereunder to the extent that performance of such obligations is prevented or delayed by any cause, existing or future, which is beyond the reasonable control of such party. Delays arising from the actions or inactions of one or more of CONTRACTOR's principals, officers, employees, agents, subcontractors, consultants, vendors, or suppliers are expressly recognized to be within CONTRACTOR's control.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 Methods and Procedures

A. The parties shall attempt to resolve any dispute related to this contract as follows. Either party shall provide to the other party, in writing and with full documentation to verify and substantiate its decision, its stated position concerning the dispute. No dispute shall be considered submitted and no dispute shall be valid under this provision unless and until the submitting party has delivered the written statement of its position and full documentation to the other party. The parties shall then attempt to resolve the dispute through good faith efforts and negotiation between the OWNER Representative and a CONTRACTOR Representative. At all times, CONTRACTOR shall carry on the work under this contract and maintain and complete work in accordance with the requirements of the contract or determination or direction of the OWNER. If the parties are unable to resolve their dispute as described above within 30 days, the parties may request that the dispute be submitted to the Board of Public Works for resolution. If the parties are dissatisfied with the decision of the Board of Public Works, the parties’ reserve the right to pursue any available legal and/or equitable remedies for any breaches of this contract except as that right may be limited by the terms of this contract.

ARTICLE 17 - MISCELLANEOUS

17.01 Giving Notice

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

17.02 Computation of Times

A. 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.

17.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws and 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.
17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or giver in accordance with the Contract Documents, will survive final payment, completion, and an acceptance of the Work or termination or completion of the Agreement.

17.05 Controlling Law

A. This contract shall be governed exclusively by the laws of the State of New Hampshire and any claim or action brought relating to this contract, the work performed or contracted to be performed thereunder, or referable in anyway thereto shall be brought in Hillsborough County (New Hampshire) Superior Court Southern Judicial District or in the New Hampshire 9th Circuit Court—Nashua and not elsewhere.

17.06 Access to Records

A. At all times during regular business hours, CONTRACTOR shall provide full and free access to the OWNER, ENGINEER, and State of New Hampshire to any books, documents, papers, and records related to the work for the purpose of examination, audit, and duplication. The CONTRACTOR shall maintain all required accounts, records, and books for three years after final completion of the work.

17.07 Road Closures and Traffic Delays

A. Partial or full closure of streets in order to facilitate construction will be permitted, or required by the Engineer in accordance with the following:

1. If the CONTRACTOR proposes a closure, the CONTRACTOR notifies the OWNER in writing at least 5 days prior to the proposed closure of his intent to close the road.

2. At least 5 days prior to the proposed closure, the CONTRACTOR shall submit a detour traffic plan for each location being detoured.

3. The CONTRACTOR shall install standard traffic control devices in accordance with the Detour Signage plan provided in the bid documents and the Manual on Uniform Traffic Control Devices (MUTCD.)

4. The detour signage shall be covered when the road closure is not in effect.

B. CONTRACTOR shall notify the following agencies of any traffic delays or road closures three days in advance of the work:

Nashua Police Department: (603) 594-3500
Nashua Fire Department: (603) 594-3652
School Bus Garage: (603) 594-4300
Nashua Solid Waste Department: (603) 589-3410
Nashua Building Department: (603) 589-3080

17.08 Prohibited Interests

A. CONTRACTOR shall not allow any officer or employee of the OWNER to have any indirect or direct interest in this contract or the proceeds of this contract CONTRACTOR warrants that no officer or employee of the OWNER has any direct or indirect interest, whether contractual, noncontractual, financial or otherwise, in this contract or in the business of CONTRACTOR. If any such interest comes to the attention of CONTRACTOR at any time, a full and complete disclosure of the interest shall be immediately made in writing to the OWNER. CONTRACTOR also warrants that it presently has no interest and that it will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this contract. CONTRACTOR further warrants that no person having such an interest shall be employed in the performance of this
contract. If OWNER determines that a conflict exists and was not disclosed to the OWNER, it may terminate the contract at will or for cause in accordance with Article 15.02.

B. In the event Contractor (or any of its officers, partners, principals, or employees acting with its authority) is convicted of a crime involving a public official arising out or in connection with the procurement of work to be done or payments to be made under this contract, City may terminate the contract at will or for cause in accordance with paragraph 9. Upon termination, Contractor shall refund to the City any profits realized under this contract, and Contractor shall be liable to the City for any costs incurred by the City in completing the work described in this contract. At the discretion of the City, these sanctions shall also be applicable to any such conviction obtained after the expiration or completion of the contract.

C. Contractor warrants that no gratuities (including, but not limited to, entertainment or gifts) were offered or given by Contractor to any officer or employee of the City with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending or making of any determinations with respect to the performance of this contract. If City determines that such gratuities were or offered or given, it may terminate the contract at will or for cause in accordance with Article 15.02.

D. The rights and remedies of this section shall in no way be considered for be construed as a waiver of any other rights or remedies available to the City under this contract or at law.

17.09 Cooperation with Refuse Pickup

A. Contractor shall determine the schedule for trash pickup by contacting the City of Nashua Solid Waste Department. The Contractor shall cooperate and make arrangements to insure that trash pickup is not delayed or obstructed in any way. This may involve the Contractor bring trash barrels to the front or backside of the work area for pickup by the Solid Waste Department and then returning the barrels back to each house.
LIST OF EXHIBITS

A. Notice of Award
B. Notice to Proceed
C. Change Order
D. Certificate of Substantial Completion

DIVISION 8
EXHIBITS
NOTICE OF AWARD

DATED: ____________________________

TO: ____________________________________________
(Bidder)

ADDRESS: ____________________________________________

OWNER’S CONTRACT NO.: ____________________________________________

PROJECT: _________________________________________________________
(Insert name of Contract as it appears in the Bidding Document)

You are notified that your Bid dated ____________________________ for the above Contract has been considered. You are the apparent Successful Bidder and have been awarded a contract for

as advertised plus

addendums. (Indicate total Work, alternatives or sections or Work awarded)

The Contract Price of your contract is

($) ____________________________

The proposed Agreement that the OWNER expects to execute, accompanies this Notice of Award.

1. You must deliver to the OWNER 3 fully executed counterparts of the proposed Agreement that the OWNER expects to execute.

2. You must deliver to the OWNER the Contract Security (Bonds), as specified in the General Conditions (paragraph 5.01), and Certificate of Liability Insurance, as specified in General Conditions (paragraph 5.04).

3. (List other conditions precedents).

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited.

By ____________________________________________
(FOR THE CITY OF NASHUA)

__________________________________________
(TITLE)

Notice of Award
NOTICE TO PROCEED

DATED:

TO: ___________________________________________________ (Contractor)

ADDRESS: ____________________________________________________

OWNER’S CONTRACT NO.__________________________________________

PROJECT: ________________________________________________________ (Insert name of Contract as it appears in the Bidding Document)

You are notified that the Contract Times under the above contract will commence to run on ___________________________, 20____. By that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the dates of Substantial Completion and Final Completion are __________________________and __________________________, respectively.

Also before you may start any Work at the site you must:

(Add other requirements)

By ____________________________________________________________ (For the City of Nashua)

_________________________ (Title)
CHANGE ORDER

PROJECT: ________________________________________________________________

OWNER’S CONTRACT NO: __________________________________________________

EXECUTED CONTRACT DATE: _____________________________________________

DATE OF ISSUANCE: __________________________ EFFECTIVE DATE: Upon City Approval

OWNER: __________________ City of Nashua, NH

OWNER’s Purchase Order NO.: _____________________________________________

CONTRACTOR: __________________________________________________________

ENGINEER: __________________ Sanborn, Head & Associates

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

Description:

Justification:

Change Order # 1 of 2
## Summary

<table>
<thead>
<tr>
<th>CHANGE IN CONTRACT PRICE:</th>
<th>CHANGE IN CONTRACT TIMES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Contract Price</td>
<td>Original Contract Times</td>
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<tr>
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<td>Substantial completion:</td>
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<td></td>
<td>Ready for final payment:</td>
</tr>
<tr>
<td>Contract Price prior to this Change Order</td>
<td>Net Increase (decrease) of this Change Order</td>
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<tr>
<td>$</td>
<td>Contract Times with all approved Change Orders</td>
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<td>Substantial completion:</td>
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<td>Ready for final payment:</td>
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<tr>
<td>Net Increase (decrease) of this Change Order</td>
<td>$</td>
</tr>
<tr>
<td>Contract Price with all approved Change Orders</td>
<td>$</td>
</tr>
</tbody>
</table>

**RECOMMENDED:**

By: __________________________
Sanborn, Head & Associates Engineer (Authorized Signature)  
Date: ________________________

**ACCEPTED:**

By: __________________________
Name  
Contractor (Authorized Signature)  
Date: ________________________

**APPROVED:**

By: __________________________
Mayor Jim Donchess Owner (Authorized Signature)  
Date: ________________________

Change Order # 2 of 2
CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT: ________________________________

OWNER'S CONTRACT NO: ________________________________

DATE OF ISSUANCE: ________________________________

OWNER: ________________________________ City of Nashua, NH

OWNER's Purchase Order NO.: ________________________________

CONTRACTOR: ________________________________

ENGINEER: ________________________________ Sanborn, Head & Associates

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

TO ________________________________ City of Nashua
(OWNER)

And To ________________________________
(CONTRACTOR)

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

__________________
(DATE OF SUBSTANTIAL COMPLETION)

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

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

OWNER: City of Nashua

CONTRACTOR:

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

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

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

Executed by ENGINEER on _____________________________, 20___

__________________________________________
(ENGINEER)

By: ________________________________
(Authorized Signature)

CONTRACTOR accepts this Certificate of Substantial Completion on _____________________________, 20___

__________________________________________
(CONTRACTOR)

By: ________________________________
(Authorized Signature)

OWNER accepts this Certificate of Substantial Completion on _____________________________, 20___

__________________________________________
(For the City of Nashua)

By: ________________________________
(Authorized Signature)
DIVISION 9

TECHNICAL SPECIFICATIONS
TECHNICAL SPECIFICATIONS
PHASE III LANDFILL EXPANSION
Four Hills Landfill
Nashua, New Hampshire
Solid Waste Permit No. DES-SW-SP-95-002

Nashua
NEW HAMPSHIRE’S GATE CITY

Prepared for Waste Management of New Hampshire, Inc.
File No. 3066.09
December 2017
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- Section 02200 – Earthwork
- Section 02510 – Nonwoven Geotextiles
- Section 02520 – Drainage Geocomposite
- Section 02530 – Geosynthetic Clay Liner
- Section 02550 – Geomembrane
- Section 02560 – Interface Strength Testing
- Section 02710 – Culverts
- Section 02830 – Topsoil, Hydoseeding, and Turf Establishment
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DIVISION 2 – SITE WORK

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Section 02530 – Geosynthetic Clay Liner
Section 02550 – Geomembrane
Section 02560 – Interface Strength Testing
Section 02710 – Culverts
Section 02830 – Topsoil, Hydrosedding, and Turf Establishment
Section 02950 – Cleanup and Site Restoration
SECTION 02000

EROSION AND SEDIMENTATION CONTROL

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. CONTRACTOR shall furnish all labor, materials, tools and equipment, and perform all operations necessary to provide erosion and sedimentation control measures in accordance with the Drawings and Specifications.

1.2 PROJECT CONDITIONS

A. CONTRACTOR shall perform the Work in such a manner as to prevent erosion and the resulting sedimentation. The work area shall be graded, shaped, and otherwise drained in a manner that limits soil erosion, siltation of drainage swales, damage to vegetation damage to areas outside the work area. CONTRACTOR shall implement and maintain erosion and sedimentation control measures in accordance with all pertinent site and project stormwater permit requirements, or as directed by OWNER or ENGINEER for the duration of construction and until vegetative cover is provisionally accepted and such measures are no longer required.

B. Erosion control methods shall be installed, maintained, and removed in accordance with the Drawings, this specification, and the latest version of the NH Stormwater Manual. The construction sequence shall be consistent with the approved construction sequence contained in the Alteration of Terrain Permit for this project.

1.3 SUBMITTALS

A. CONTRACTOR shall submit to ENGINEER certification that the Sediment Filter Logs and Erosion Control Blankets meet the required specifications at least 15 days prior to delivery of the material to the site.

B. CONTRACTOR shall submit to ENGINEER the proposed seed mix including the manufacturer’s certificate of compliance at least 15 days prior to seeding.

C. CONTRACTOR shall submit to ENGINEER a certified statement for approval as to the number of pounds of materials (e.g., seed, lime, fertilizer, etc.) to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the hydroseeder.

D. CONTRACTOR shall submit for approval schedules for seeding and fertilizing prior to the Work being performed.
1.4  GENERAL METHODOLOGY

A.  Erosion and sedimentation control methods shall consider all factors that contribute to erosion and sedimentation including, but not limited to, the following:
1.  Topographic features of the Project area.
2.  Types, depth, slope and areal extent of the soils.
3.  Proposed alteration of the area.
4.  Amount of runoff from the Project area, borrow areas, and the upgradient watershed areas.
5.  Staging of earthmoving activities.
6.  Temporary control measures and facilities for use during earthmoving.

PART 2 – PRODUCTS

2.1  MATERIALS

A.  Sediment Filter Logs
1.  Sediment Filter Logs shall be a compost-filled bio- or photo-degradable tubular mesh product capable of trapping sediment before or within the device while allowing stormwater runoff to pass through.
2.  The mesh shall be of natural biodegradable materials to avoid problems with the sock trapping endangered snakes or lizards, such as biodegradable jute, sisal, burlap, or coir fiber fabric.
3.  The mesh fabric shall must be clean, evenly woven, and free of encrusted concrete or other contaminating materials and free from cuts, tears, broken or missing yarns and thin, open, or weak places.
4.  Each sediment Filter Log shall have a diameter of no less than 8 inches.
5.  The mesh opening shall be no smaller than ½ inch.
6.  The compost shall be derived from green material consisting of chipped, shredded, or ground vegetation, or clean recycled wood products, and be reasonably free of visible contaminates. It shall not be derived from mixed municipal solid waste and shall not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. The compost shall not possess objectionable odors.
7.  The Sediment Filter Log must have a minimum durability of one year after installation.

B.  Erosion Control Blankets shall be a Rolled Erosion Control Product that complies with Temporary Slope Stabilization Type C as defined Section 645 of the NHDOT Specifications.

C.  Mulch shall consist of cured straw free from primary noxious weed seeds, twigs, debris and rough or woody materials. Mulch shall be free from rot or mold and shall be acceptable to the ENGINEER or OWNER. Alternately, mulch shall be specially processed cellulose homogeneous fiber containing no growth or germination-inhibiting factors. Processed cellulose fiber shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to
form a slurry when sprayed on the ground. The material shall allow homogeneous absorption and percolation of moisture. Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content. Mulch shall be utilized on all newly-graded subgrade and topsoil areas that cannot be seeded within five (5) days.

PART 3 – EXECUTION

3.1 CONSTRUCTION SEQUENCE

A. Construction of erosion control measures shall be completed prior to any site work.

B. Sediment barriers shall be used at storm drain inlets; across minor swales and ditches; and at other applications where the structure is of a temporary nature and structural strength is not required. Sediment barriers are temporary berms, diversions, or other barriers that are constructed to retain sediment on-site by retarding and filtering storm runoff.

C. All temporary erosion control measures shall be maintained throughout the course of construction activities until provisional acceptance of the Site vegetation by ENGINEER or OWNER, at which time CONTRACTOR shall remove all remaining temporary erosion control structures, and properly dispose of accumulated sediment at temporary or permanent erosion control structures on-site in areas approved by OWNER.

D. OWNER, ENGINEER, or the CQA Consultant may require additional erosion and sediment controls be installed or that temporary erosion and sediment controls be replaced. CONTRACTOR shall comply with said request and immediately install the required controls.

3.2 CONSTRUCTION METHODS

A. All temporary erosion control measures shall be installed as shown on the Drawings or as directed by OWNER, ENGINEER, or the CQA Consultant in the field.

B. All temporary erosion control measures shall be installed in accordance with manufacturer’s instructions.

C. Straw mulch shall be applied at a rate of 100 lbs/1000 ft².

D. CONTRACTOR shall provide protection against washouts by an approved method. Any washout that occurs either in the CONTRACTOR’s work area or in areas topographically below the work shall be regraded and reseeded at CONTRACTOR’s expense until an accepted vegetative stand is established.
3.3 MAINTENANCE AND INSPECTION

A. Contractor shall inspect and document all temporary erosion control measures as required by the Construction Stormwater Pollution Prevention Plan. Any damaged erosion control measure shall be repaired/replaced promptly.

[END OF SECTION 02000]
SECTION 02050

DUST CONTROL AND WORK AREA MAINTENANCE

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Dust control shall be of paramount importance during construction. CONTRACTOR shall perform operations and maintain the site, including haul roads, so that the creation and dispersion of dust is limited to the degree practical. Dust control shall be implemented throughout the duration of the Project.

B. CONTRACTOR is responsible for maintaining the haul roads and the work area. Haul road maintenance shall be performed to ensure safe and efficient access. Work area maintenance also shall include the protection of monitoring wells, and other infrastructure installed at the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. CONTRACTOR shall use a watering truck as approved by OWNER.

B. Water for dust control shall be obtained from locations designated by the OWNER.

C. Chemical dust suppressants shall not be used.

PART 3 - EXECUTION

3.1 GENERAL

A. CONTRACTOR shall implement strict dust control measures during active construction periods. These control measures will generally consist of water applied as often as necessary to limit dust emissions, often numerous times per day during dry weather, or as directed by OWNER, ENGINEER, or the CQA Consultant.

B. Existing access roads shall be used by CONTRACTOR whenever possible, so as not to interfere with on-going landfill operations or deliveries to the active landfill face. If new haul roads are required to access work areas, then CONTRACTOR shall obtain approval from OWNER prior to their construction. Haul roads used during the execution of Work, whether temporary haul roads created by CONTRACTOR or existing site roads, shall be maintained by
CONTRACTOR. Unless otherwise approved by OWNER, temporary haul roads shall be restored by smooth grading and seeding to re-establish vegetation.

C. Groundwater and landfill gas monitoring wells have been installed and are located throughout the site. CONTRACTOR shall protect the wells from damage during construction. Measures taken to protect the wells from damage will include flagging and construction of barricades around the wells. Any well damaged by construction activities will be replaced by OWNER at CONTRACTOR's expense.

[END OF SECTION 02050]
SECTION 02100
GRUBBING AND TOPSOIL REMOVAL

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. This Work shall consist of grubbing, removing, and disposing of all vegetation and debris including stumps, branches, and shrubs, within the limits of Work shown on the Drawings or specified below.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

A. No trees shall be cut outside of the work area designated on the Drawings.

B. CONTRACTOR shall install erosion and sediment controls in areas topographically below areas, that will be disturbed and shall perform the Work in a manner that limits erosion and sedimentation. CONTRACTOR shall cease work and install additional erosion and sediment control measures if directed by OWNER, ENGINEER, or the CQA Consultant.

C. Grubbing shall include the removal of brush, stumps, and large roots to a depth of 2 feet below subgrade unless otherwise directed by ENGINEER or OWNER. In order to conserve topsoil, CONTRACTOR shall make use of rake teeth on bulldozers in the process of removing stumps and brush unless other equipment is allowed by OWNER.

D. Stumps, large roots, branches, other wood, brush, weeds, grass and other perishable material resulting from the clearing and grubbing operations shall be disposed of in an on-site area designated by OWNER.

E. CONTRACTOR shall strip topsoil for subsequent reuse. Topsoil shall be stockpiled on-site in an area approved by OWNER.

[END OF SECTION 02100]
SECTION 02200

EARTHWORK

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. CONTRACTOR shall provide all labor, materials, equipment and incidentals necessary to perform the earthwork required to complete the Work shown on the Drawings and specified herein, including, but not limited to: excavation, placement, grading, and compaction of earth materials; sampling and testing (laboratory and field) earth materials; and disposal and stockpiling of surplus soil.

B. CONTRACTOR shall work with the Construction Quality Assurance (CQA) Consultant and provide assistance as needed so that the required quality assurance sampling and testing may be performed. Quality assurance activities shall be considered germane to the Work and not be a cause for scheduling delays. Quality assurance requirements are defined in the Construction Quality Assurance Plan.

1.2 SUBMITTALS

A. Prior to initiating interface strength tests (See Section 02560), CONTRACTOR shall provide the following information to ENGINEER:
   1. the proposed material source or sources (either on-site or off-site); and
   2. laboratory test data in conformance with the requirements of Part 2.2.

B. Following approval of materials by ENGINEER, CONTRACTOR shall provide the testing laboratory with samples of each type of soil to be tested for interface strength.

C. As soon as the information is available, CONTRACTOR shall provide ENGINEER the results of field and laboratory tests performed on soil. Test reports of field tests are to be submitted by the following morning.

D. If Work is interrupted for reasons other than inclement weather, then CONTRACTOR shall notify ENGINEER a minimum of 24 hours prior to the resumption of Work.
1.3 SOIL TESTING AND CONSTRUCTION MONITORING

A. Prior to and during placement of soil, the CQA Consultant may select areas within the work limits for field compaction testing. CONTRACTOR shall cooperate fully with the CQA Consultant during testing and shall allow the CQA Consultant sufficient time to make necessary observations and tests.

B. OWNER will pay the CQA Consultant for testing. However, if test results indicate inadequate compaction or earth materials not meeting the Specifications, CONTRACTOR shall bear all costs associated with correcting deficiencies in compacted materials to the satisfaction of the OWNER and the CQA Consultant.

PART 2 – PRODUCTS

2.1 GENERAL

A. The CQA Consultant shall collect soil samples for grain-size testing per ASTM D422 and hydraulic conductivity tests (where applicable) per ASTM D2434 or D5084 for each 3,000 cubic yards of each type of soil to be used in the Work. In addition, the CQA Consultant will obtain a representative sample from each source of the Drainage Sand for calcium carbonate testing. Soil materials not meeting the requirements of this Section shall not be used in the Work. Test methods for soil materials shall conform to the following, unless other approved by the ENGINEER.
   1. Particle-Size Analysis, with hydrometer – ASTM D422.

B. The final approval of a source for the soil will be at the sole discretion of ENGINEER.

C. All earth materials unless otherwise specified, shall consist of suitable selected and approved clean, well-graded granular soil.

D. All earth materials shall be substantially free from organic materials, wood, trash, and other objectionable materials that may be compressible or that cannot be properly compacted. Earth materials shall not contain stone blocks, broken concrete, masonry rubble, or other similar materials. Earth materials shall have the physical properties such that it can be readily spread and compacted to the specified permeability and/or density. Snow, ice, and frozen soil shall not be permitted.
2.2 STRUCTURAL FILL

A. Structural Fill shall be used for construction of embankments and general raises-in-grade. Structural Fill shall be friable soil and shall be free of trash, ice, snow, tree stumps, roots, and other organic material.

B. Structural Fill shall contain no stone greater than 8 inches in diameter and contain no more than 50 percent of the material passing the No. 200 sieve.

C. Structural Fill placed within 6 inches of geosynthetics shall contain no stone greater than 1-inch in diameter.

2.3 SCREENED TILL

A. Screened Till shall be used to establish the landfill subgrade beneath the geomembrane in the secondary liner system and where otherwise indicated on the Drawings.

B. The Screened Till shall contain no stone greater than \( \frac{3}{8} \) inches in diameter, and be free from ice and snow, roots, sod, clay, rubbish and other deleterious

C. Screened Till shall exhibit a hydraulic conductivity of less than \( 1 \times 10^{-4} \text{ cm/sec} \) when tested in accordance with ASTM D5084. Test specimens shall be compacted at a moisture content that provides a density no less than 95 percent of the maximum dry density as determined by ASTM D698. Hydraulic conductivity testing shall be performed at a normal stress of 89 pounds per square inch (lb/in.\(^2\)).

D. Screened Till shall exhibit an internal angle of friction of no less than 30 degrees when tested in accordance with ASTM D3080. Test specimens shall be compacted at a moisture content and density matching that at which acceptable hydraulic conductivity tests were performed. Testing shall be performed at the following normal stresses of 22, 44, and 89 lb/in.\(^2\).

2.4 DRAINAGE SAND

A. Drainage Sand shall be used as a soil component of the primary and secondary liner systems and where otherwise specified on the Drawings.

B. Drainage Sand shall be free from ice and snow, roots, sod, clay, rubbish and other deleterious or organic matter meeting the following grain size requirements:
<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>½-inch</td>
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<td>0 - 17</td>
</tr>
<tr>
<td>No. 200</td>
<td>0 - 10</td>
</tr>
</tbody>
</table>

C. Drainage Sand shall provide a hydraulic conductivity greater than $1 \times 10^{-4}$ cm/sec as measured by ASTM D2434.

D. Drainage Sand shall contain no more than 15 percent calcium carbonate as measured by ASTM D4373.

2.5 CRUSHED STONE

A. Crushed Stone to be placed around the secondary and primary leachate collection pipes shall meet the requirements of #57 aggregate as specified in Section 703 of the NHDOT Specifications.

B. Crushed Stone to be placed under buildings, manholes, and other similar structures shall meet the requirements of #67 aggregate as specified in Section 703 of the NHDOT Specifications.

2.6 RIPRAP

A. Stone used for Riprap shall be hard, durable, angular in shape; resistant to weathering and to water action; free from overburden, spoil, and organic materials; and shall meet the gradation requirements specified.

B. Neither breadth nor thickness of a single stone should be less than one-third ($\frac{1}{3}$) its length. Rounded stone or boulders will not be accepted unless authorized by ENGINEER and OWNER.

C. The sources from which Riprap will be obtained shall be selected well in advance of the time when the material will be required in the Work. The acceptability of the material will be determined by service records for similar stone and/or by suitable tests. If testing is required, suitable samples of stone shall be taken in the presence of the CQA Consultant at least fourteen (14) days in advance of the time when the placing of Riprap is expected to begin. The approval of some rock fragments from a particular quarry shall not be construed as constituting the approval of all rock fragments taken from the quarry.
D. In the absence of service records, resistance to disintegration from the type of exposure to which the stone will be subjected will be determined by the following tests:
1. The results of the abrasion test (ASTM C535) shall indicate a percentage loss of not more than forty (40) after five hundred (500) revolutions.
2. The results of the sulfate soundness test (ASTM C88) shall indicate a loss not exceeding ten percent (10%) after five (5) cycles.

E. Riprap shall generally meet the following gradation requirements:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Finer by Weight</th>
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<tbody>
<tr>
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<tr>
<td>6-inch</td>
<td>20 – 40</td>
</tr>
<tr>
<td>3-inch</td>
<td>0 – 20</td>
</tr>
<tr>
<td>2-inch</td>
<td>0 – 10</td>
</tr>
</tbody>
</table>

F. Control of gradation will be by visual inspection.

G. Any difference of opinion between the CQA Consultant and CONTRACTOR shall be resolved by dumping and checking the gradation of two (2) random truckloads of stone. Mechanical equipment, a sorting site, and labor needed to assist in checking gradation shall be provided by CONTRACTOR at no additional cost to OWNER.

2.7 TOPSOIL

A. Topsoil shall be used for areas beyond the cell limits disturbed during construction. Topsoil shall be free of trash, ice, snow, tree stumps, roots, sticks, clay, peat, weeds, sod, and other non-soil based organic materials.

B. Topsoil shall be friable soil containing no stone greater than 2 inches in diameter and contain no more than 70 percent of the material passing the No. 200 sieve.

C. Topsoil shall be obtained from naturally well-drained areas.

D. Topsoil shall not be excessively acid or alkaline nor contain material harmful to plants.

PART 3 – EXECUTION

3.1 EQUIPMENT
A. CONTRACTOR shall only use equipment that has been approved by ENGINEER for this Work.

B. CONTRACTOR shall furnish, operate, and maintain grading equipment as is necessary to produce uniform layers, sections, and smoothness of grade for compaction and drainage.

C. CONTRACTOR shall furnish, operate and maintain compaction equipment as is necessary to produce the required in-place density and moisture content.

D. CONTRACTOR shall furnish, operate, and maintain tank trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to variable surface widths, if moisture conditioning is required to achieve the specified in-place density and moisture content.

E. CONTRACTOR shall furnish, operate, and maintain soil spreading equipment that travels on the material being spread without traveling directly on the surface of the underlying compacted soil surface layer.

F. CONTRACTOR shall furnish, operate, and maintain miscellaneous equipment such as scarifiers, disks, spring tooth or spike tooth harrows, earth hauling equipment, and other equipment necessary for earthwork construction.

3.2 GENERAL

A. CONTRACTOR shall plan and perform his operations so as to prevent damage to existing structures, safeguard people and property, limit disruptions to site traffic, protect the structures to be installed, and provide safe working conditions in compliance with local safety regulations and provisions of the Occupational Safety and Health Administration (OSHA).

B. Prior to excavating or placing and compacting soil, CONTRACTOR shall carefully inspect the installed Work of all other sections and verify that all Work is complete to the point where Work of this Section may properly commence without adverse impact. If CONTRACTOR has any concerns regarding the installed work of other sections, then CONTRACTOR shall immediately notify ENGINEER prior to the initiation of soil placement. Failure to notify ENGINEER in writing shall be construed as CONTRACTOR’s acceptance of the relative Work of all other Sections.

C. Soil and aggregate shall not be stockpiled or stored within the limits of the area to be lined.

D. Soil shall be placed and compacted to the lines and grades shown on the Drawings.

E. Soil shall be placed only on dry, unfrozen subgrade surfaces.
F. Soil shall be placed in loose lifts that result in a compacted lift thickness no greater than 8 inches. Compaction shall be performed using a static smooth-drum roller or padded-foot compactors as specified elsewhere in this Section. Hand compaction of material shall be used in locations where larger compaction is inappropriate due to limited area.

G. CONTRACTOR shall finish each day's work with a smooth-drum roller to create a smooth surface, free from ruts or indentations, that will limit moisture penetration. The area shall be left in a manner to promote runoff at the end of each day.

H. Prior to continuing construction from the previous day's work, CONTRACTOR shall scarify the surface to provide a bond between the layers.

3.3 EXCAVATION BELOW GRADE

A. Excavations shall be made to the elevations and dimensions shown on the Drawings. Excavate sufficient material to provide suitable room for construction providing bracing and support as required. The bottom of the excavations shall be rendered firm and dry and in all respects acceptable to the CQA Consultant.

B. Remove water accumulated in excavations by pumping or other means to maintain a dry and stable subgrade until earthwork operations are complete. All dewatering shall be performed at CONTRACTOR’s cost. Pumped water shall be treated using a sediment control system such as DIRTBAG® by ACF Environmental or other system approved by the ENGINEER. Treated water shall be directed to the stormwater basins.

C. Where the soil subgrade has been softened, eroded, or otherwise disturbed by flooding, exposure during unfavorable weather, or other causes, it shall be over-excavated and replaced with suitable material at no cost to OWNER.

D. When the excavation has reached required depths, ENGINEER shall be notified and will observe conditions. If, in the opinion of the CQA Consultant, the material in its undisturbed natural condition, at or below the normal grade of the excavation as indicated on the Drawings is unsuitable, it shall be removed and be replaced with suitable material as directed by ENGINEER. CONTRACTOR shall be responsible for the removal, relocation, and stockpiling of unsuitable material. Unsuitable material is classified here as stumps, excessively wet soil, ledge rock, ice, topsoil, subsoil, organics, existing fill, or other deleterious material.

E. CONTRACTOR shall exercise care to preserve the material below and beyond the lines of excavation. If the bottom of an excavation is extended below the limits shown on the Drawings or specified or directed by ENGINEER, then it
shall be refilled and compacted in accordance with these specifications at CONTRACTOR's expense with fill approved by ENGINEER.

3.4 EXCAVATION FOR UTILITY TRENCHES

A. Excavate as necessary for installation of utilities including, culverts, leachate collection and transmission system pipe, and for related structures and appurtenances.

B. Excavations for utilities shall be carried out in a manner that will preserve the undisturbed state of the subgrade soils. Dewatering shall be performed as needed to provide a dry excavation.

C. Excavation of trenches required for the installation of subsurface utilities shall be made to the depths indicated on the Drawings and in such a manner and to such widths as will give suitable room for laying the pipe within the trenches, for bracing and supporting, and for drainage facilities. CONTRACTOR shall render the bottom of the excavations firm and dry, and acceptable to the CQA Consultant.

3.5 MISCELLANEOUS EARTHWORK

A. CONTRACTOR shall perform earthwork as necessary to permit the placement of topsoil, for constructing access roads, and any other miscellaneous earth excavation required.

3.6 SUBGRADE PREPARATION

A. Prior to placing earth materials, the subgrade should be compact, dry, and free from debris, ice, and snow. Earth materials shall not be placed over frozen soil unless otherwise approved by ENGINEER.

B. CONTRACTOR shall excavate in such a manner as to limit disturbance of the underlying natural ground. Deterioration of the subgrade between the time of excavation and initial fill placement shall be the responsibility of CONTRACTOR and shall be repaired at CONTRACTOR's expense.

C. All subgrade surfaces shall be observed by the CQA Consultant prior to earth placement. Sufficient time must be given to the CQA Consultant to observe and perform tests on the subgrade.

D. Subgrade for pavement or geosynthetic placement shall be proof-rolled by at least four (4) passes of a 10,000-pound vibratory, smooth-drum roller to demonstrate strength. The subgrade shall be smooth and uniformly graded and shall be prepared to the grades indicated on the Drawings. All objects capable of penetrating the overlying geosynthetics, including, but not limited
to, stones, sticks, and debris shall be removed by hand and replaced with compacted earth material as indicated on the Drawings.

E. Deterioration of the subgrade surface between acceptance of the CQA Consultant and deployment of the geosynthetic materials is the responsibility of CONTRACTOR and shall be repaired at no cost to OWNER.

F. Areas to receive Topsoil shall be inspected and approved by the CQA Consultant before Topsoil is placed. After Topsoil has been spread and fine-graded, CONTRACTOR shall remove and dispose of all rubbish, sticks, large stiff clods, lumps, brush, roots, stumps, litter, stones larger than 3 inches, and other foreign material from the area to be covered with topsoil.

G. The Topsoil surface shall be tracked immediately after fine grading and other preparation has been completed. Tracking is to be performed with bulldozers operating in the direction of water flow. The tracks of the bulldozers are to have grousers of sufficient height to leave visible depressions in the subgrade. The depressions are to be perpendicular to the direction of water flow to reduce erosion potential until topsoil is placed. During the tracking, all depressions caused by settlement or tacking shall be filled with additional topsoil and the surface shall be regraded and tracked until an even finished grade is created.

3.7 SOIL PLACEMENT AND COMPACCIÓN

A. Unless otherwise shown on the Drawings, Topsoil shall be placed to a minimum thickness of 4 inches. CONTRACTOR shall exercise care to ensure that the underlying soil remains intact and does not become mixed with the Topsoil during placement.

B. Topsoil shall not be compacted.

C. Soil shall be placed in loose continuous layers and compacted to the specified compaction criteria. The loose lift fill thickness shall not exceed 12 inches. Smaller lift heights may be required to achieve the specified compaction.

D. Compaction shall be by mechanical means designed specifically for soil compaction. The CQA Consultant, ENGINEER, or OWNER reserves the right to disapprove any device of inadequate capacity or, in their opinion of a type unsuited to the character of material being compacted.

E. Placed and compacted soil shall be graded to drain and provide a smooth surface that will readily shed water.

F. Earth materials containing ice, snow, frozen soil, large rocks, roots, soil, rubbish and other deleterious or organic material shall not be placed. Frozen soil shall not be placed as fill, nor shall fill or utilities be placed on frozen soil.
G. Earth materials shall not be placed during weather conditions that do not allow for proper moisture and density control. CONTRACTOR shall not resume earthwork operations until the moisture content and the density of the previously placed soil are as specified. During freezing conditions, subgrades and each lift of fill must be compacted before the water in the subgrade or the fill can freeze.

H. Soil that is too wet for proper compaction shall be removed or discsed, harrowed, rototilled, or otherwise dried to proper moisture content for compaction to the required density.

I. Soil that is too dry for proper compaction shall receive water uniformly applied over the surface of the loose layer. Compaction shall not be performed until the moisture content of the fill material is uniform. Sufficient water shall be added to allow for compaction to the required density.

J. The degree of soil compaction shall be based on a maximum dry density as determined by the ASTM D698. The minimum degree of compaction required, unless otherwise noted in plans or directed and approved by ENGINEER, shall be 95 percent. The moisture content, unless otherwise specified or directed by ENGINEER, shall be between -2 and +2 percent of the optimum moisture content determined by ASTM D688.

K. For Screened Till the degree of soil compaction shall be governed by the in-place hydraulic conductivity, which shall be no greater than $1 \times 10^4$ cm/sec when tested in accordance with ASTM D5084.

3.8 UTILITY TRENCH BACKFILL

A. CONTRACTOR shall backfill utility trenches as soon as practicable after the utility placed and tested in accordance with the appropriate section(s) of the Specifications and has been observed and approved by the CQA Consultant. CONTRACTOR is responsible for the satisfactory construction of the utility. If subsequent testing shows defects in materials or workmanship, then the necessary repairs and replacements shall be made by CONTRACTOR to the satisfaction of the CQA Consultant at no additional cost to OWNER.

B. Trench bedding and backfill shall be as specified on the Drawings. Trench backfill shall be placed simultaneously on either side of the pipe and compacted in such a manner as to avoid displacement of the utility. CONTRACTOR shall place and compact the backfill such that stones do not strike or remain in contact with the utility.

C. Trench bedding shall be placed to the spring line of the pipe and shaped so that the pipe is firmly supported across its diameter for its entire length. Particular
care shall be taken to provide recesses in the bedding or trench bottom, as required, to relieve each bell of any load.

D. Placement of trench bedding shall be performed by skilled personnel and shall precede the laying of pipe by a reasonable distance.

E. From the top of the bedding to a minimum of 6 inches above the pipe crown, the trench shall be backfilled with the specified material placed evenly on both sides of the pipe with care being taken not to raise or otherwise dislodge the pipe. Backfill to this depth shall be thoroughly compacted with approved hand-operated devices.

F. No stone or rock fragment greater than 1 inch shall be placed into the trench nor shall large masses of backfilling material be dropped into the tamped layers of backfill until a minimum of 6 inches of backfill has been placed over the top of the pipe.

G. Wet backfill shall not be placed in the trench or compacted. CONTRACTOR shall suspend compacting activities until the backfill materials exhibit a moisture content sufficient to allow for proper compaction.

3.9 DRAINAGE SAND

A. The Drainage Sand shall be installed as shown on the Drawings.

B. No Drainage Sand shall be placed until the CQA Consultant has approved the installation of the underlying geosynthetics.

C. Drainage Sand over drainage geocomposite shall only occur under the observation of the CQA Consultant.

D. CONTRACTOR shall use extreme care in placing Drainage Sand over the geosynthetics. The Drainage Sand shall be placed in a manner that will maintain a minimum thickness of 12 inches of material at all times between the geosynthetics and the bottom of construction equipment spreading material. Unless otherwise specified by ENGINEER, all equipment operating on earthen materials overlying the geosynthetics shall comply with the following:

<table>
<thead>
<tr>
<th>Allowable Equipment Ground Pressure (psi)</th>
<th>Thickness of Overlying Compacted Soil (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5</td>
<td>1.0</td>
</tr>
<tr>
<td>&lt;10</td>
<td>1.5</td>
</tr>
<tr>
<td>&lt;20</td>
<td>2.0</td>
</tr>
<tr>
<td>&gt;20</td>
<td>3.0</td>
</tr>
</tbody>
</table>

E. CONTRACTOR shall control grades using a method which will not damage the geosynthetics. Grade stakes shall not be used in areas where geosynthetics...
have been placed. Materials that may be used to control grades include, but are not limited to, sections of cardboard tubes or Styrofoam.

F. CONTRACTOR shall ensure that:
   1. The geosynthetics remain intact during the installation of the overlying soil;
   2. No foreign material is mixed into the soil; and
   3. No vehicles drive on the uncovered geosynthetics.

3.10 RIPRAP

A. Riprap shall be placed on top of a nonwoven geotextile.

B. Riprap shall be placed to its full thickness in one operation and in such a manner as to avoid displacing the underlying material or damaging the geotextile.

C. The larger stones shall be well distributed such that there are no large accumulations of either the larger or smaller sizes of stone.

D. A dense riprap section, in which all sizes of material are placed in their proper proportions, should be produced. Hand-placing or rearranging of individual stones by mechanical equipment may be required to secure the results specified.

E. Unless otherwise authorized by ENGINEER, riprap shall be placed in conjunction with the dressing and preparation of the drainage channels. CONTRACTOR shall not delay placement of riprap.

F. The edge of riprap areas shall be blended into existing slope contours.

3.11 PERFORATIONS

A. Perforations in the compacted soil that must be filled shall include, but not be limited to:
   1. nuclear density test probe locations; and
   2. test probes.

B. Perforations in the compacted soil shall be backfilled with similar soil and compacted. The filled perforation shall be completed to the satisfaction of ENGINEER.
3.12 DEFECTIVE AREAS

A. If a defective area is discovered in the compacted soil, then the CQA Consultant will notify CONTRACTOR who shall proceed to determine the extent and nature of the defect. If the defect is indicated by an unsatisfactory test result, then CONTRACTOR will determine the extent of the defective area by additional tests, observations, a review of records, or other means that CONTRACTOR deems appropriate. If the defect is related to adverse site conditions, such as overly wet soils or surface desiccation, then CONTRACTOR will define the limits and nature of the defect.

B. After the extent and nature of a defect has been determined, CONTRACTOR shall correct the deficiency to the satisfaction of the CQA Consultant. The cost of corrective actions shall be borne by CONTRACTOR.

C. Additional testing will be performed, CONTRACTOR to verify that the defect has been corrected. This additional testing will be performed before any additional work is allowed in the area of deficiency.

3.13 FIELD QUALITY ASSURANCE

A. The CQA Consultant will monitor the placement and compaction of earth materials.

B. The CQA Consultant will perform quality testing as outlined in the CQA Plan.

C. The CQA Consultant shall select locations to observe construction and perform moisture content, gradation, and compaction tests. Where tests indicate that the soil tested does not conform to the specified compaction requirements, CONTRACTOR shall remove and recompact the material to the specified density at no additional cost to OWNER.

D. Samples of the in-place Screened Till shall be obtained for laboratory hydraulic conductivity testing. Sampling shall be performed using thin-walled tube samplers in accordance with ASTM D1587. Laboratory testing for hydraulic conductivity shall be accordance with ASTM D5084 and shall be performed at a normal stress of 89 lb/in.².

E. The presence of the OWNER, ENGINEER, or the CQA Consultant does not include supervision or direction of the Work by CONTRACTOR, his employees, or agents. Neither the presence of OWNER, ENGINEER, or the CQA Consultant, nor any observations and testing performed by them shall excuse CONTRACTOR from defects discovered in the Work.
F. Soil materials not meeting the Specification requirements shall not be used in the Work.

3.14 GRADING TOLERANCE

A. Disturbed areas shall be graded so that water sheds and no ponding of surface water runoff.

B. Finished grades shall be within ½ inch of the required elevations in areas where the geomembrane will be placed.

C. Finished grades shall be within 1 inch of the required elevations in areas beyond that addressed in Paragraph 3.14.B.

[END OF SECTION 02200]
SECTION 02510
NONWOVEN GEOTEXTILE

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. CONTRACTOR shall provide all labor, materials, tools, and equipment and perform all operations necessary to furnish, deploy, and install Nonwoven Geotextile in the areas indicated on the Drawings or as required by ENGINEER or OWNER.

1.2 QUALITY ASSURANCE

A. Experience
   1. CONTRACTOR shall be trained and experienced in field handling, storing, deploying, installing, and protecting geotextiles.
   2. CONTRACTOR shall demonstrate at least four years of experience in sewing Nonwoven Geotextile and shall have completed at least four projects that required Nonwoven Geotextile sewing. Alternatively, CONTRACTOR shall engage an experienced Subcontractor or manufacturer’s agent who shall meet the experience requirements.

B. Submittals
   1. CONTRACTOR shall submit to ENGINEER certification that the Nonwoven Geotextile and thread meet the required specifications, and a description of the proposed sewn seam types at least 15 days prior to delivery of materials to the site.
   2. CONTRACTOR shall submit the qualifications of the person(s) who will be sewing Nonwoven Geotextile prior to performing the related Work.

1.3 MATERIALS STORAGE AND HANDLING

A. CONTRACTOR shall be responsible for the handling, storage, and care of Nonwoven Geotextile from the time of delivery to the site until final acceptance of the completed Work by OWNER. CONTRACTOR shall be liable for all damages to the materials during such time.

PART 2 - PRODUCTS

2.1 GENERAL

A. The Nonwoven Geotextile provided shall meet or exceed the property values specified herein. Nonwoven Geotextile shall be comprised of polymeric yarns of fibers or weld or drawn strands oriented into a stable network that will retain its structure during handling, placement, and long-term service.
Nonwoven Geotextile shall be capable of withstanding direct exposure to the sunlight for 30 days with no measurable deterioration.

B. The Nonwoven Geotextile fabrics shall be non-biodegradable. CONTRACTOR shall follow the manufacturer's recommendations regarding handling and installation of such materials.

2.2 GEOTEXTILES

A. Nonwoven Geotextile shall be installed as indicated in the Drawings.

B. Nonwoven Geotextile shall be manufactured of polypropylene or polyester material exhibiting the following Minimum Average Roll Values (MARV).

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>MARV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10 oz/yd²</td>
</tr>
<tr>
<td>Mass per Unit Area (oz/yd²)</td>
<td>ASTM D 5261</td>
<td>10</td>
</tr>
<tr>
<td>Grab Tensile Strength (lbs)</td>
<td>ASTM D 4632</td>
<td>250</td>
</tr>
<tr>
<td>Trapezoidal Tear Strength (psi)</td>
<td>ASTM D 4533</td>
<td>100</td>
</tr>
<tr>
<td>Apparent Opening Size (mm)</td>
<td>ASTM D 4751</td>
<td>&lt;0.21</td>
</tr>
<tr>
<td>Puncture Resistance (lbs)</td>
<td>ASTM D 4833</td>
<td>140</td>
</tr>
<tr>
<td>Water Flow Rate (gpm/ft²)</td>
<td>ASTM D 4491</td>
<td>70</td>
</tr>
</tbody>
</table>

PART 3 – EXECUTION

3.1 INSTALLATION

A. Nonwoven Geotextile shall be installed in accordance with the manufacturer's recommendations, as shown on the Drawings and specified herein.

B. Where the use of adjacent sheets of a Nonwoven Geotextile are required and are not to be sewn, a minimum overlap of 18 inches shall be maintained.

C. Sheets of Nonwoven Geotextile used in drainage swales, or areas subject to concentrated stormwater flow, shall be shingled such that the upslope Nonwoven Geotextile overlies the adjacent downgradient sheet.

D. All holes and tears in the Nonwoven Geotextile shall be noted and repaired as specified by ENGINEER.

[END OF SECTION 02510]
SECTION 02520
DRAINAGE GEOCOMPOSITE

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. CONTRACTOR shall provide all labor, materials, tools, and equipment and perform all operations necessary to furnish, deploy, and install Drainage Geocomposite in the areas indicated on the Drawings or as required by ENGINEER or OWNER.

1.2 QUALITY ASSURANCE

A. CONTRACTOR shall be trained and experienced in field handling, storing, deploying, and installing Drainage Geocomposite. Alternatively, CONTRACTOR shall engage an experienced Subcontractor who shall meet the experience requirements.

B. CONTRACTOR shall submit to ENGINEER certification that the material meets the required Specifications at least 15 days prior to delivery of materials to the site.

C. Drainage geocomposite shall be sampled and tested in accordance with the approved Construction Quality Assurance (CQA) plan.

1.3 MATERIAL STORAGE AND HANDLING

A. CONTRACTOR shall be responsible for the handling, storage, and care of the Drainage Geocomposite from the time of delivery to the site until final acceptance of the completed work by the CQA Consultant, ENGINEER, and OWNER. CONTRACTOR shall be liable for all damages to the materials during such time.

1.4 SUBMITTALS

A. CONTRACTOR shall submit manufacturer’s data indicating conformance with these Specifications.

B. Drawings showing geocomposite sheet layout, location of seams, direction of overlap, and sewn seams.

C. Description of proposed method of deployment, sewing equipment, sewing methods, and provisions for holding geocomposite temporarily in place until permanently secured.
PART 2 - PRODUCTS

2.1 GENERAL

A. The Drainage Geocomposite shall meet the performance requirements of this section. CONTRACTOR may select from either a geonet geocomposite or a multi-liner geocomposite.

2.2 MULTI-LINEAR DRAINAGE GEOCOMPOSITE

A. Material Description

1. Multi-Linear Drainage Geocomposite shall consist of two geotextile layers comprised of short synthetic staple fibers of 100% polypropylene or polyester needle-punched together with perforated corrugated polypropylene pipes (mini-pipes) regularly spaced inside.

2. The perforated polypropylene pipes shall function as the primary fluid conveyance. The pipes shall be corrugated with two perforations per corrugation at 180° and alternating at 90°.

B. Multi-Liner Drainage Geocomposite Properties

1. The components of the Multi-Linear Drainage Geocomposite specified shall meet or exceed the values provided in the table below.

<table>
<thead>
<tr>
<th>MANUFACTURING QUALITY CONTROL TEST REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHARACTERISTIC</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td><strong>Mini-pipe Properties</strong></td>
</tr>
<tr>
<td>Outside diameter</td>
</tr>
<tr>
<td>Stiffness at 5% deflection</td>
</tr>
<tr>
<td><strong>Geotextile Properties (each component)</strong></td>
</tr>
<tr>
<td>Mass Per Unit Area</td>
</tr>
<tr>
<td>Grab Tensile Strength</td>
</tr>
<tr>
<td>Trapezoidal Tear Strength</td>
</tr>
<tr>
<td>Puncture CBR</td>
</tr>
<tr>
<td>AOS(1)</td>
</tr>
<tr>
<td>Permittivity</td>
</tr>
<tr>
<td><strong>Geocomposite Properties</strong></td>
</tr>
<tr>
<td>Transmissivity (2)</td>
</tr>
</tbody>
</table>

Notes:
(1) Maximum Average Value.
(2) Measured at a minimum seating time of 100 hours, with a test section including Drainage Sand above the Drainage Geocomposite and textured 60-mil textured HDPE below, using a gradient of 0.1 under a compressive stress of 12,000 psf for 100 hours.
2.3 GEONET DRAINAGE GEOCOMPOSITE

A. Material Description
1. Geonet Drainage Geocomposite shall consist of a geonet to which a geotextile has been heat-bonded to both sides.
2. The geonet shall be manufactured of high-density polyethylene.
3. The geotextile shall be needle-punched, nonwoven, short synthetic staple polypropylene or polyester fibers

B. Geonet Drainage Geocomposite Properties
1. The components of the Multi-Linear Drainage Geocomposite specified shall meet or exceed the values provided in the table below.

<table>
<thead>
<tr>
<th>MANUFACTURING QUALITY CONTROL TEST REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHARACTERISTIC</td>
</tr>
<tr>
<td>Geonet Properties</td>
</tr>
<tr>
<td>Core Net Thickness</td>
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<tr>
<td>Resin Specific Gravity</td>
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<tr>
<td>Resin Melt Index</td>
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<tr>
<td>Tensile Strength</td>
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<tr>
<td>Carbon Black Content</td>
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<tr>
<td>Geotextile Properties (each component)</td>
</tr>
<tr>
<td>Mass Per Unit Area</td>
</tr>
<tr>
<td>Grab Tensile Strength</td>
</tr>
<tr>
<td>Trapezoidal Tear Strength</td>
</tr>
<tr>
<td>Puncture CBR</td>
</tr>
<tr>
<td>AOS(1)</td>
</tr>
<tr>
<td>Permittivity</td>
</tr>
<tr>
<td>Geocomposite Properties</td>
</tr>
<tr>
<td>Transmissivity(2)</td>
</tr>
<tr>
<td>Ply Adhesion</td>
</tr>
</tbody>
</table>

Notes:
(1) Maximum Average Value.
(2) Measured at a minimum seating time of 100 hours, with a test section including Drainage Sand above the Drainage Geocomposite and textured 60-mil textured HDPE below, using a gradient of 0.1 under a compressive stress of 12,000 psf for 100 hours.

2.4 TIES (for Geonet Drainage Geocomposite only)

A. Ties used to secure adjacent sheets of Geonet shall be plastic fasteners or polymer braid and shall meet the approval of ENGINEER. Metallic ties shall not be allowed. Ties shall be yellow or white to facilitate inspection.
2.5 THREAD

A. Thread used to seam the geotextile shall be polymer material with chemical resistance properties equal to or exceeding those of the geotextile. The thread shall be different color than the geotextile.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Drainage Geocomposite shall not be stockpiled or stored within the limits of the area to be lined.

B. Drainage Geocomposite shall be installed in accordance with manufacturer’s recommendations, and as shown on the Drawings and specified herein. If a Drainage Geocomposite with a preferential flow direction is used, it shall be installed oriented with the preferential flow direction perpendicular to the contours unless otherwise approved by ENGINEER.

C. Care shall be taken to keep the Drainage Geocomposite clean prior to installation.

D. Folds or excessive wrinkling of deployed Drainage Geocomposite shall be removed to the extent practicable. CONTRACTOR shall exercise care not to entrap stones, excessive dust, or foreign objects in the material. Drainage Geocomposite shall be adequately weighted, using sand bags or equivalent until the Drainage Sand and Crushed Gravel cover is placed.

E. Adjacent sheets of Drainage Geocomposite shall be overlapped a minimum of 4 inches, and shall be secured using ties, if appropriate for the material used, placed at intervals no greater than 5 feet. Additional ties spaced at intervals not exceeding 2 feet shall be used on seams running across slopes and located in anchor trenches. Spot welding of the Drainage Geocomposite to the geomembrane shall not be allowed.

F. The upper geotextile on adjacent panels of Drainage Geocomposite shall be sewn together with a continuous seam in the field prior to placement of overlying soil. All seams on sideslopes shall be oriented parallel to the slope. The adjacent sheets of geotextile shall be overlapped a minimum of 6 inches prior to seaming. All overlaps shall be such that the upslope sheet is placed over the downslope sheet. No holes in the upper geotextile will be allowed. All tie holes at horizontal seams shall be covered with a leistered nonwoven geotextile patch.
G. Drainage Geocomposite shall not be exposed to ultraviolet rays for more than fourteen (14) days before being covered. CONTRACTOR shall place Drainage Sand over the Drainage Geocomposite as specified in Section 02200 and in such a manner as to ensure the Drainage Geocomposite is not damaged.

[END OF SECTION 02520]
SECTION 02530

GEOSPHTETIC CLAY LINER

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, tools, and equipment and perform all operations necessary to furnish, deploy, and install Geosynthetic Clay Liner (GCL) in the areas indicated on the Drawings or as required by the ENGINEER or OWNER.

1.2 SUBMITTALS

A. CONTRACTOR shall submit to ENGINEER certification that the materials meet the required specifications and the manufacturer's instructions for handling and installing the material, at least ten days prior to delivery of materials to the site.

1.4 QUALITY ASSURANCE

A. CONTRACTOR shall be trained and experienced in field handling, storing, deploying, and installing GCL. Alternatively, CONTRACTOR shall engage an experienced subcontractor who shall meet the experience requirements.

B. GCL shall be sampled and testing in accordance with the approved Construction Quality Assurance (CQA) plan.

1.5 MATERIAL STORAGE AND HANDLING

A. All rolls shall be labeled and bagged in packaging that is resistant to degradation by ultraviolet (UV) light.

B. CONTRACTOR shall be responsible for the handling, storage, and care of the GCL from the time of delivery to the site until final acceptance of the completed work by OWNER. CONTRACTOR shall be liable for all damages to the materials during such time.

C. The GCL shall be stored in a dry location and off the ground.

PART 2 – PRODUCTS

2.1 GCL

A. The GCL shall consist of a continuous layer of sodium bentonite sandwiched between a woven geotextile carrier layer and a nonwoven geotextile cover layer and reinforced with needle punched fibers.
B. The sodium bentonite components shall be 90 percent montmorillonite (from Wyoming) and shall be applied to the base carrier sheet at no less than 1 pound/square foot.

C. Carrier sheets shall be woven polypropylene (3.1 oz/yd² minimum), and nonwoven polypropylene (6 oz/yd² minimum).

D. The sodium bentonite shall have a permeability no greater than $5 \times 10^{-9}$ cm/sec at 5 psi confining pressure and 2 psi head.

**PART 3 - EXECUTION**

3.1 INSTALLATION

A. GCL shall be installed in accordance with the manufacturer's recommendations, and as shown on the Drawings and specified herein.

B. GCL shall be deployed over prepared and approved subgrade as soon as practicable after completion of subgrade preparation. The material shall be placed so as not to cause subgrade disturbance with the carrier side in contact with the Drainage Sand. GCL shall not be deployed through standing water or during rainfall. Care shall be exercised to ensure that no large stones or foreign objects are trapped beneath the GCL.

C. CONTRACTOR shall only deploy GCL in an area that can be completed in one day. Completion includes deploying, seaming, and covering with Geomembrane. If inclement weather is approaching or is present, no additional GCL shall be placed until the previously placed GCL is covered with Geomembrane and seam. GCL that becomes wet and hydrates shall be removed and replaced at the discretion of ENGINEER at no additional cost to OWNER.

D. Adjacent sheets of GCL shall be overlapped a minimum of 6 inches. A continuous bead of granular sodium bentonite shall be applied between all overlapping edges of material. On sideslopes, seams shall be perpendicular to the contours. Seams shall be made in accordance with the manufacturer's recommendations. Wrinkles and creases shall be removed from a sheet prior to deploying and overlapping the adjacent sheet. CONTRACTOR shall clean all dirt and debris from contacting surfaces.

E. Where cuts are required during installation, the exposed surfaces shall receive powdered bentonite and be slightly hydrated.

F. All holes, tears, and cuts in the GCL shall be recorded and repaired in accordance with the manufacturer's recommendations or as specified by ENGINEER.

[END OF SECTION 02530]
SECTION 02550

GEOMEMBRANE

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. CONTRACTOR shall furnish all labor, materials, tools, equipment, and incidentals, and perform all operations necessary to furnish, deploy, seam, and test the textured, high-density polyethylene (HDPE) Geomembrane (Geomembrane) as described in this Specification and where indicated in the Drawings.

1.2 DEFINITIONS

A. Geomembrane Manufacturer: The party responsible for the manufacturing of the Geomembrane liner material.

B. Installation Contractor: The Installation Contractor shall be the Geomembrane Manufacturer or a contractor approved by the manufacturer to install the Geomembrane Manufacturer’s Geomembrane and who is trained and experienced in field handling, storing, deploying, seaming, and QC testing of Geomembrane for landfill applications.

C. Lot: A quantity of resin (usually the capacity of one rail car) used by the Geomembrane Manufacturer. Each finished roll of Geomembrane will be identified by a roll number traceable to the resin lot used.

D. Panel: Unit of Geomembrane seamed in the field and is larger than 100 square feet (ft²).

E. Patch: Unit of Geomembrane seamed in the field and is smaller than 100 ft².

F. CQA Consultant: OWNER will engage a CQA Consultant to verify the quality of raw materials, the integrity and quality of seams and seaming processes performed on-site, and the locations and results of all testing and repair work performed. The CQA Consultant will observe and document the work, and in particular, the quality control testing performed by the Installation Contractor.

H. Quality Control (QC): The Geomembrane Manufacturer shall implement QC measures to ensure that the Geomembrane provided meets the Specifications provided herein. The Installation Contractor shall implement QC measures to ensure Geomembrane installation is complete and is in compliance with the Specifications contained herein. QC procedures include, but are not limited to providing the Geomembrane Manufacturer's material QC certifications; providing experienced and competent field staff; performing adequate
personnel training; performing QC testing during Geomembrane installation; and maintaining records documenting QC items, such as, as-built panel layout, locations and identifications of all repairs, locations and results of all destructive and non-destructive field tests, as specified herein.

G. **Subgrade Surface**: The soil surface that immediately underlies geosynthetic material.

### 1.3 SUBMITTALS

A. CONTRACTOR shall submit with the Bid for the Work the following information.
   1. Installation Contractor qualifications, including project descriptions with references.
   2. Brand of Geomembrane to be used, and a statement from the Geomembrane Manufacturer detailing its properties and composition, and a description of the Geomembrane Manufacturer’s QC program.

B. At least 15 days prior to manufacturing the proposed Geomembrane, CONTRACTOR or Geomembrane Manufacturer shall submit the proposed manufacturing dates for the rolls to be utilized. The Geomembrane Manufacturer will coordinate with the CQA Consultant so that a representative may be present to observe the manufacturing of the Geomembrane to be used on the project.

C. No more than 15 days after the Notice of Award, the Installation Contractor shall submit the following:
   1. Shop Drawings showing extent, sizes, panel identification numbers, and details of the Geomembrane installation, including recommendations for terminating the material and proposed methods of sealing around penetrations if different from those shown on the Drawings. Except for special requirements due to configuration and/or terminating the Geomembrane, maximum use of large-size panels shall be made.
   2. Superintendent qualifications.
   3. QC plans detailing proposed QC procedures.
   4. The Geomembrane Manufacturer’s certification that the resin used meets the Specifications. The QA/QC certificates issued by the Geomembrane Manufacturer and the resin supplier shall be provided.
   5. Samples of all materials shall be submitted for inspection and acceptance.

D. Prior to shipping the Geomembrane from the factory, CONTRACTOR shall provide the roll certifications to the CQA Consultant.

E. Prior to deploying Geomembrane, the Installation Contractor shall provide a letter to the CQA Consultant indicating the acceptance of the Subgrade Surface.
F. During the course of the work, the Installation Contractor shall maintain as-built drawings showing, but not limited to, panel layout and identification, seam type and identification, repair locations and identifications, and destructive test sample locations and identification. The Installation Contractor shall submit working copies of the as-built drawings to the CQA Consultant upon request, and shall submit a final copy to ENGINEER prior to moving off the site.

1.4 QUALIFICATIONS OF INSTALLATION CONTRACTOR AND MANUFACTURER

A. To perform the work of this Specification, the Installation Contractor shall have demonstrated by previous experience its ability to do the Work. The required previous experience shall consist of the following:
   1. The Installation Contractor shall be approved and/or licensed to install the products by the Geomembrane Manufacturer.
   2. The Installation Contractor shall have successfully installed Geomembrane for not less than ten projects, or Geomembranes totaling a minimum of 2,000,000 ft² similar in type to that specified herein, now giving satisfactory service in the United States.
   3. The Installation Contractor shall provide documentation for at least three similar Geomembrane projects of at least 200,000 ft² in continuous area.

B. The Geomembrane Manufacturer shall have manufactured and fabricated not less than 10,000,000 ft² of Geomembrane similar to that specified herein.

C. The Installation Contractor shall provide the services of a competent field technical representative throughout the installation of the Geomembrane and all appurtenant structures and soils contacting the Geomembrane. The field technical representative shall remain on-site and be responsible throughout the installation of the Geomembrane for Geomembrane layout, seaming, patching, testing, repairs, and other activities of the Installation Contractor. The field technical representative shall have personally supervised and directed the installation of a minimum of 2,000,000 ft² of Geomembrane.

D. All personnel performing seaming operations shall be qualified by experience and by successfully passing seaming tests. At least one seamer shall have experience seaming a minimum of 1,000,000 ft² of Geomembrane with a similar method. This “Master Seamer” will provide direct supervision over less experienced seamers; no seaming will take place without a Master Seamer present.

E. All field seams shall be inspected over their full length in accordance with these Specifications by the Installation Contractor in the presence of the CQA Consultant or the CQA Consultant’s representative.
F. The manufacturer shall furnish complete written instructions for storage, handling, installation, seaming, repair, and inspection of the Geomembrane material in compliance with this Specification and conforming to the conditions of the warranty. A copy of all manufacturer's literature shall be submitted to the CQA Consultant upon request.

1.5 PROJECT MEETINGS

A. A preconstruction meeting is required between OWNER, ENGINEER, CONTRACTOR, the CQA Consultant, and the Installation Contractor, prior to the start of Geomembrane installation work on-site. The intent of the meeting is to discuss the requirements of these Specifications to ensure that all parties involved are familiar with their respective responsibilities.

B. The Installation Contractor shall attend other construction meetings that may be held during the installation of the geosynthetics associated with the project. These meetings will be held to review work activities, discuss the project schedule, provide clarifications, and review possible questions.

1.6 QUALITY ASSURANCE

A. OWNER will retain a the CQA Consultant to perform construction quality assurance services during the Geomembrane installation. The CQA Consultant shall be on-site for observation of Geomembrane handling, deploying, seaming, testing, and repair work.

B. The Installation Contractor shall cooperate with the CQA Consultant, and furnish tools, samples of materials, and assistance as requested.

C. The Installation Contractor shall apprise the CQA Consultant of the proposed work schedule on a daily basis, and shall inform the CQA Consultant of schedule changes in a timely manner.

D. The Installation Contractor shall advise ENGINEER and the CQA Consultant before placing orders for Geomembrane, so that arrangements may be made, if desired, for inspection of the Geomembrane during manufacturing. The Installation Contractor shall at all times furnish the CQA Consultant and its representatives facilities, including labor, and allow proper time for observing and testing materials and workmanship. The Installation Contractor shall allow time in the schedule for possible delays due to the necessity of materials and workmanship being observed, tested and accepted for use. The Installation Contractor shall furnish, at his/her own expense, all samples of materials required by ENGINEER or the CQA Consultant for testing.

E. Geomembrane shall be sampled and tested in accordance with the approved Construction Quality Assurance (CQA) Plan.
PART 2 - PRODUCTS

2.1 GEOMEMBRANE

A. Membrane Resin Specifications
   1. Geomembrane shall be from first-quality resin containing no recycled polymer (product run may be recycled). The resin shall be the same for the Geomembrane and the extrudite rod or bead and shall meet the following specifications:

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melt Index</td>
<td>ASTM D1238</td>
<td>&lt;1.0 grams (g)/10 min.</td>
</tr>
<tr>
<td></td>
<td>Condition 190/2.16</td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>ASTM D4883</td>
<td>0.94 g/cm³</td>
</tr>
</tbody>
</table>

B. Geomembrane Specifications
   1. The Geomembrane Manufacturer shall deliver Geomembrane that is in conformance with the specifications below:

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness (min. ave.):</td>
<td></td>
<td>57 mil</td>
</tr>
<tr>
<td>Lowest individual of 8 out of 10 values</td>
<td>ASTM D5994</td>
<td>54 mil</td>
</tr>
<tr>
<td>Lowest individual for any of the 10 values</td>
<td></td>
<td>51 mil</td>
</tr>
<tr>
<td>Asperity Height (min. ave.)</td>
<td>ASTM D7466</td>
<td>16 mil</td>
</tr>
<tr>
<td>Formulated Density</td>
<td>ASTM D1505 or D792</td>
<td>0.94 g/cc</td>
</tr>
<tr>
<td>Tensile strength (min. ave.) (A)</td>
<td>ASTM D6693</td>
<td>126 lb/in. width</td>
</tr>
<tr>
<td>Yield strength</td>
<td></td>
<td>90 lb/in. width</td>
</tr>
<tr>
<td>Break strength</td>
<td></td>
<td>12 percent</td>
</tr>
<tr>
<td>Yield elongation</td>
<td></td>
<td>100 percent</td>
</tr>
<tr>
<td>Break elongation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tear resistance (min. ave.)</td>
<td>ASTM D1004</td>
<td>42 lbs</td>
</tr>
<tr>
<td>Puncture resistance (min. ave.)</td>
<td>ASTM D4833</td>
<td>90 lbs</td>
</tr>
<tr>
<td>Stress Crack Resistance (min. ave.) (B)</td>
<td>ASTM D5397</td>
<td>≥ 500 hours</td>
</tr>
<tr>
<td>Carbon Black Content (range)</td>
<td>ASTM D4218</td>
<td>2 to 3 percent</td>
</tr>
<tr>
<td>Carbon Black Dispersion</td>
<td>ASTM D5596</td>
<td>(C)</td>
</tr>
<tr>
<td>Oxidative Induction Time (min. ave.)</td>
<td>ASTM D3895</td>
<td>≥ 100 minutes</td>
</tr>
</tbody>
</table>

Notes:

A. Test in Machine direction and cross machine direction. The average values should be based on 5 test specimens each direction.
   - Yield elongation is calculated using a gage length of 1.3 inches.
   - Break elongation is calculated using a gage length of 2.0 inches.

B. This test is not appropriate for testing geomembranes with textured or irregular rough surfaces. The test should be conducted on smooth edges of textured rolls or on smooth sheets made from
the same formulation as being used for the textured sheet materials. The yield stress used to calculate the applied load for the test should be the manufacturer’s mean value obtained from the manufacturer’s quality control testing of the same sample.

C. Carbon black dispersion (only near spherical agglomerates) for 10 different views:
   - 9 in Categories 1 or 2; and
   - 1 in Category 3.

2. The Geomembrane shall contain a minimum of 2 percent but not more than 3 percent carbon black according to ASTM D1603, and have a carbon black dispersion rating of Category 1 or Category 2 according to ASTM D5596.

3. The Geomembrane shall consist of unreinforced HDPE containing 3 percent by weight maximum additives, fillers, or extenders, including carbon black.

4. The Geomembrane shall have no striations, pinholes, or bubbles and shall be free of holes, blisters, undispersed raw materials, or any sign of contamination by foreign matter.

5. The Geomembrane delivered to the site shall be accompanied by a QC Certificate for each roll (roll Certificates must be provided to the CQA Consultant prior to shipment to the job site), and shall be identified with a distinctive code that will serve as the identification number on the as-built drawing.

6. Samples shall be taken from the delivered material by the CQA Consultant, at a frequency of one sample per 50,000 ft², and shall be sent to an Independent Testing Laboratory to assure conformance with the specifications listed in Paragraphs 2.1, B.1, B.2, and B.3 of this Section. Geomembrane Manufacturer’s certifications that the environmental stress crack testing and dimensional stability requirements are met will be accepted.

7. The texturing of the Geomembrane shall be regular and uniform. Rolls of Geomembrane containing irregular texturing (bald areas or clumps of texturing material) shall be rejected by the CQA Consultant and must be removed from the site at no cost to OWNER.

8. See Section 02560 for information on interface strength requirements.

PART 3 – EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

A. Transportation to the site and unloading and storage at the site shall be the responsibility of the Installation Contractor. Damaged Geomembrane or Geomembrane not meeting these Specifications shall be immediately removed from the site and replaced, at no cost to OWNER. Once delivered and accepted by the CQA Consultant, the Geomembrane rolls shall be stored on a prepared surface approved by the CQA Consultant, no more than three rolls high, and protected from dirt, grease, water, abrasions, excessive heat or cold, or other damage.
B. Geomembrane rolls shall be handled with appropriate equipment to prevent damaging or stressing of the Geomembrane. Loading and unloading shall be performed using equipment such as spreader bars and cloth chokers. Deployment shall be performed using equipment such as roll bars and vise-grip pliers designed to handle sheet materials. Any damaged Geomembrane shall be repaired or replaced immediately, at the discretion of the CQA Consultant, and at no cost to OWNER.

C. Geomembrane shall not be stockpiled or stored within the limits of the area to be lined.

3.2 WEATHER CONDITIONS

A. Geomembrane panels shall not be installed, seamed, or repaired during periods of precipitation, excessively high winds, or in areas of ponded water or excessive moisture. Geomembrane panels may be installed and seamed only if the ambient air temperature, measured 6-inches above the Geomembrane, is less than 110 degrees (°) Fahrenheit (F). Installation and seaming of Geomembrane panels in ambient temperatures below 40°F shall only be performed with approval of ENGINEER, and only if trial seams demonstrate the ability to meet seaming specifications. The Installation Contractor shall submit for ENGINEER’s review and approval a plan for installation and seaming Geomembrane in temperatures between 0°F and 32°F.

3.3 GENERAL INSTALLATION

A. The Installation Contractor shall be responsible for field handling, storing, placing, and seaming, plus any other processes required to assemble a continuous secure Geomembrane.

B. Installation shall be performed under the direction of a competent field technical representative. The technical representative shall be in charge of the installation and shall be responsible for the work performed.

C. Smoking is prohibited on the Geomembrane or other geosynthetics associated with the project. Installation Contractor personnel who are reminded by CONTRACTOR, ENGINEER, OWNER, or the CQA Consultant more than 3 times of the no smoking requirements will be asked to leave the site.

D. Subgrade preparation and bedding placement shall be performed in accordance with Section 02200. Surfaces to be lined shall be smooth and free of all rocks, stones, sticks, roots, sharp objects, or debris of any kind. The surface should be smooth and provide a firm, unyielding foundation for the Geomembrane with no sudden, sharp, or abrupt changes or breaks in grade. No standing water or excessive moisture shall be allowed. Prior to the installation of any Geomembrane, the Installation Contractor and the CQA Consultant shall observe the surface that the Geomembrane will be installed.
The Installation Contractor will direct any remedial work required to bring the surface into compliance with the Specifications required for Geomembrane installation. Upon satisfactory surface preparation, the Installation Contractor and the CQA Consultant will issue a letter to OWNER indicating acceptance of the subgrade.

E. The Geomembrane shall be placed over the prepared surfaces in a manner that results in minimum handling. Any portion of Geomembrane damaged during installation by any cause shall be removed or repaired at no additional cost to OWNER.

F. Geomembrane panels to be installed on slopes shall be oriented such that seams are parallel to the line of slope. The seams shall be terminated or extended a minimum of 25 feet from the toe of slope.

G. Each Geomembrane panel shall be assigned a simple and logical identification number or letter. In addition, the Installation Contractor shall record the roll number, location, and date of installation of each panel placed. The panels shall be marked by their identification number or letters, and shall be recorded on the as-built drawings by the Installation Contractor. Upon completion of the Work, the Installation Contractor shall submit as-built drawings with panel identifications to the CQA Consultant.

H. The panel layout pattern will be decided upon prior to placement in a meeting between OWNER, ENGINEER, CONTRACTOR, the CQA Consultant, and the Installation Contractor. The panel overlap pattern should be similar to that used for shingles, to facilitate the drainage of water. No more panels shall be deployed during a single day than can be seamed or tack-welded together that same day.

I. All deployed Geomembrane panels shall be protected from wind uplift by placing suitable ballast that will not damage the Geomembrane during its placement or removal.

J. All disturbed subgrade or other underlying material shall be repaired and observed by the CQA Consultant prior to deploying Geomembrane panels.

K. Vehicle traffic shall not be allowed directly on Geomembrane panels. Equipment shall not damage panels by handling, leakage, transporting across panels, or any other means. Personnel working on or with Geomembrane panels shall not wear shoes that may damage the panels.

L. Geomembrane panels shall be deployed using methods that will not stretch, crimp, abrade, or otherwise damage panels. Placement of panels shall employ methods that limit wrinkles and differential wrinkles between adjacent panels.
M. Placement of soil shall not occur on Geomembrane that is under stress due to thermal contraction or other causes, or that has large winkles that may fold over and crimp, or when the ambient air temperature, measured 6-inches above the Geomembrane, is greater than 104°F or lower than 40°F without prior approval of ENGINEER. Panels under tensile stress due to thermal contraction or any other cause shall be cut and a patch shall be placed to provide compensation for Geomembrane contraction. Equipment shall not be operated directly on the Geomembrane during placement of soil.

N. Geomembrane panels shall be secured in the anchor trench as indicated on the Drawings.

O. All pipe penetrations through the Geomembrane shall be sealed with a boot of the same material as the panels, meeting the same resin specifications, and installed in accordance with the Drawings.

3.4 GEOMEMBRANE SEAMING

A. Geomembrane seams shall be arranged so that the seams are oriented parallel to the line of maximum slope. Cross or butt seams on slopes, seams located in corners, and unusual geometric panel shapes shall be minimized and shall be installed such that the upgradient sheet is installed over the edge of the downgradient sheets.

B. The seam identification system shall be related to and be compatible with the panel identification system.

C. Seaming equipment shall be equipped with temperature gauges and readout devices that enable continuous monitoring of equipment temperatures during seaming. Electric generators shall be capable of providing constant voltage under load and shall be underlain with a splash pad to collect spilled fuel or oil when located on the Geomembrane.

D. Surfaces to be seamed shall be overlapped a minimum of 4 inches and cleaned of moisture, grease, dust, dirt, debris, and any other foreign material. No solvent or adhesive shall be used for seaming without approval from the manufacturer and the ENGINEER.

E. Where moisture or dirt interferes with the seam, a protective sheet of plastic shall be placed below the seam overlap to protect the panels being seamed. This may consist of a “rub sheet” of plastic that is pulled along beneath the seaming apparatus.

F. Surfaces to be seamed using extrusion welding shall be cleaned of oxidation by disc grinder not more than one hour before extruding the seam. Abrasion of the seam area with the disc grinder shall not extend beyond the extrusion bead area unless inspected and approved by the CQA Consultant. Tack welding of
the panels to be seamed shall not damage the Geomembrane or adversely affect the seaming operation. The top Geomembrane of the seam overlap shall be beveled and the extrusion apparatus shall be purged of heat-degraded extrudite before seaming.

G. Should wrinkles occur, a cut shall be made along the ridge of the wrinkle and laid flat so the edges of the material overlap. The overlap shall be extrusion-seamed and any portion of the seam with less than 3 inches of overlap shall be patched with a circular or oval patch extending a minimum of 6 inches beyond the cut in all directions.

H. All T-seams and air testing needle holes are to be capped with a circular or oval patch extending a minimum of 6 inches beyond the spot weld in all directions.

I. The Installation Contractor shall log the ambient air temperature 6 inches above the Geomembrane elevation, extruded temperatures in extrusion equipment barrels and nozzles, and operating temperatures of hot wedge seamers at intervals specified by the CQA Consultant.

J. The Installation Contractor shall visually inspect seams and panels for holes, crimps, abrasions, or defects, and shall mark each suspect location. All repair locations shall be assigned an appropriate identifying label that shall be clearly marked on the panel adjacent to the repair location and shall be shown on the as-built drawings. Each marked location shall be repaired, non-destructively tested, and recorded on the as-built drawings. No repairs shall be covered until passing results of non-destructive tests are achieved and accepted by the CQA Consultant.

K. Methods of repair shall consist of spot welding small tears or over-abraded areas where thickness of the Geomembrane was reduced by more than 6 mils (0.006 inches) abrading and re-welding small sections of defective extrusion welds and removing a defective seam and replacing with a new strip of material. The surface of the Geomembrane in the seam/repair area shall be abraded no more than one hour before the repair is made. All Geomembrane surfaces shall be cleaned and dried at the time of the repair. Patches over larger holes and other defects shall extend a minimum of 6 inches beyond the edges of the defect. All corners of patches shall be rounded with a radius of at least 3 inches.

3.5 TRIAL SEAM TESTING

A. Trial seams shall be performed with each seam welder at the beginning (start of shift) of each day, and at the beginning of each period after which the welder has been turned off or disconnected from its power supply, or has been idle for 30 minutes (extrusion welder) or 60 minutes (hot wedge welder), and after any change in operator personnel on a welder, after 5 hours of continuous seaming, or at any other time deemed necessary by the CQA Consultant.
B. The Installation Contractor is responsible for providing and operating an on-site tensiometer and corresponding sample cutting equipment to perform all trial and field seam testing.

C. Trial seams shall be produced under the same physical conditions as production seaming.

D. Trial seam sample testing:
   1. Trial seams shall be a minimum of 5 feet long and 12 inches wide (perpendicular to the seam).
   2. One-inch wide samples shall be cut perpendicular to the seam and tested according to ASTM D6392 in a tensiometer for bonded seam strength (shear) and peel adhesion.
   3. Two (2) samples will be tested for shear and five (5) samples for peel (10 peel tests total for fusion welds as both edges of the weld must be tested). Two passing shear tests and 4 out of 5 passing peel tests (9 out of 10 for fusion welds) are required for an acceptable trial seam.
   4. Each sample failure must consist of a ductile break that is film tearing bond and must meet the strength requirements of the following table:

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Minimum Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peel Adhesion Fusion</td>
<td>ASTM D6392</td>
<td>91 lb/in</td>
</tr>
<tr>
<td>Peel Adhesion Extrusion</td>
<td>ASTM D6392</td>
<td>78 lb/in</td>
</tr>
<tr>
<td>Shear</td>
<td>ASTM D6392</td>
<td>120 lb/in</td>
</tr>
</tbody>
</table>

E. If a trial seam test fails, then another trial seam shall be performed and tested. If the second trial seam fails, then the seam welder shall not be used until it is repaired or faulty conditions are corrected, and two trial seams pass the destructive tests.

F. A record of the date, time, ambient weather conditions, test results, operator, and equipment number shall be kept by the Installation Contractor, and submitted to the CQA Consultant on a weekly basis. A properly identified unused section of the trial weld seam will be retained by the OWNER.

3.6 INSTALLATION CONTRACTOR QC TESTING

A. The Installation Contractor shall non-destructively test the full length of all seams to ensure watertight, homogeneous seams. Test methods shall consist of vacuum box testing, air-pressure testing of double-fusion seams, or other methods approved by the manufacturer and the CQA Consultant. The test shall be performed as work progresses, rather than at the completion of all field seaming.

B. Vacuum box testing shall be performed on extrusion welds using a vacuum box with a rigid housing, transparent viewing window, a soft rubber gasket on the bottom edge, and a valve assembly with a vacuum gauge. The vacuum box
must be approved by the CQA Consultant prior to use. The CQA Consultant has the right to reject any vacuum box that he feels may not provide accurate results.

C. Vacuum box testing shall be performed by applying a soap-and-water solution to the seam and placing the box over the seam so a leak-tight seal is obtained, applying a vacuum of 5 psi to the box. The seam shall be examined through the viewing window for at least 10 seconds by the CQA Consultant for the presence of soap bubbles. If soap bubbles are detected in the viewing window, the location will be marked and repaired in accordance with these Specifications. Vacuum testing shall be performed in accordance with ASTM D5641.

D. Air pressure testing shall be performed on double-fusion seams having an air channel between the seams. Both ends of the seam shall be heat-sealed and a hollow needle with a pressure gauge and valve attached shall be inserted into the air channel. A pump shall be attached to the needle and an air pressure of 25 psi shall be applied to the air channel. The valve shall be closed and the pressure shall be observed for a minimum of 5 minutes. If the pressure drops more than 2 psi or doesn’t stabilize, then the defective area shall be located, marked, and repaired in accordance with these Specifications. After completing the air pressure test, the needle shall be removed and the hole shall be sealed and tested with the vacuum box. The CQA Consultant shall witness the entire test, including the release of pressure or vacuum, to monitor for a defective pressure or vacuum gauge. Air pressure testing shall be performed in accordance with ASTM D5820.

E. Destructive testing of seam samples shall be performed at a minimum frequency of one per 500 linear feet of seam. Seam sampling for destructive testing shall be performed as work progresses to obtain test results before seams are covered. The CQA Consultant will select the seam samples locations and, at its discretion, may take samples more frequently than one per 500 feet. If a lower testing sampling frequency is desired, the CQA Consultant will prepare and submit proposed guidelines for selecting variable sampling intervals based on a method of attributes to the New Hampshire Department of Environmental Services Solid Waste Bureau for consideration.

F. The Installation Contractor shall cut seam samples at the locations designated by the CQA Consultant. The seam samples shall be 12-inches wide and 48-inches long with the seam centered lengthwise. Each test sample shall be assigned an identification number and the locations shall be recorded on the as-built drawings.

G. All holes resulting from seam sampling shall be repaired immediately and tested with the vacuum box in accordance with these Specifications on the same day the samples are taken.
H. Laboratory testing of each seam sample shall be coordinated by the CQA Consultant and performed by an independent geosynthetic testing laboratory paid for by OWNER. Two samples will be tested for shear and five samples for peel (10 peel tests total for fusion welds as both edges of the weld must be tested). Two passing shear tests and 4 out of 5 passing peel tests (9 out of 10 for fusion welds) are required for an acceptable seam. The minimum acceptable values for passing the tests shall be those listed in Paragraph 3.5.D.4 of this Section.

I. Field testing (peel and shear) of all seam samples obtained from production seams shall be performed by the Installation Contractor and observed by the CQA Consultant prior to the shipment of the samples to an independent geosynthetics testing laboratory. Failed field tests may constitute a failed seam and further 3rd party testing may or may not be performed by OWNER. The Installation Contractor is responsible for providing and operating an on-site tensiometer and corresponding sample cutting equipment to perform all field destructive seam testing.

J. If the results of either the field or laboratory tests do not meet the above requirements, then the associated seam shall be reconstructed or capped between any two passing test seam locations, or intermediate tests may be performed on both sides of the location of the failed test sample to further isolate the defective seam area. If intermediate field test seams pass, laboratory test seams shall be performed on samples from the same locations. If laboratory test seams also pass, then the seam shall be reconstructed or capped between the intermediate sample locations. If either of the test seams fail, then the process shall be repeated with intermediate samples further away from the original failing seam location to determine the defective seam area.

K. Each seam shall be bounded by two locations where seam samples passed the laboratory tests. Whenever a reconstructed seam exceeds 150 feet, an additional sample for laboratory testing shall be obtained from along the reconstructed seam. At the CQA Consultant’s discretion, it may be necessary to take additional samples from seams welded on the same day by seaming equipment that produced seams that did not pass seam strength requirements.

L. After large areas of Geomembrane are seamed and before they are covered, large wrinkles shall be cut, re-seamed, and tested.

M. If a seam is located where non-destructive testing cannot be performed, the seam shall, at the discretion of the CQA Consultant, be liner-stripped (capped) and the liner-stripping operation shall be observed by the CQA Consultant and Installation Contractor for completeness.

N. Results and locations for all laboratory and field destructive testing and non-destructive field testing shall be displayed by the Installation Contractor on the as-built drawing.
3.7 FINAL INSPECTION

A. A final inspection shall be performed by the Installation Contractor, the CQA Consultant, ENGINEER, and OWNER prior to the Installer's crew demobilizing from the site. All identified problem areas shall be repaired by the Installation Contractor and accepted by the CQA Consultant prior to the installation crew demobilizing from the site.

[END OF SECTION 02550]
SECTION 02560

INTERFACE STRENGTH TESTING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The work in this Section includes all labor, materials, tools, and equipment necessary to perform interface strength testing for the liner system components using ASTM D5321 or D6243 for testing involving a Geosynthetic Clay Liner (GCL).

B. Liner system interfaces to be testing include:
   1. Drainage Sand/Drainage Geocomposite;
   2. Drainage Geocomposite/Geomembrane;
   3. Geomembrane/GCL;
   4. GCL/Drainage Sand; and
   6. Geomembrane/Screened Till.

C. Interface shear testing shall be performed by an independent geosynthetic testing laboratory and paid for by the Contractor.

1.02 QUALITY ASSURANCE

A. The Materials Testing Laboratory performing the interface shear testing shall be accredited by the Geosynthetics Accreditation Institute.

1.03 SUBMITTALS

A. The Contractor shall submit to the CQA Consultant the results of the laboratory tests for all the interfaces to be tested at least 10 days prior to beginning geosynthetic installation.

PART 2 - PRODUCTS

PART 3 - EXECUTION

2.01 MATERIAL SAMPLING

A. Materials to be tested shall be obtained in the presence of the CQA Consultant or his designated representative from materials that will be placed during construction. Sampling of geosynthetics may occur in the manufacturing facility.
B. The size of the geosynthetic sample to be obtained from each material type shall be determined by the needs of the test to be performed, and be no small than a 3-foot long piece cut along the length of the geosynthetic roll.

C. Soil components used in the laboratory testing program shall be obtained from the borrow source or from soil stockpiles to be utilized in the construction of the soil components during construction.

2.02 INTERFACE STRENGTH TESTING REQUIREMENTS

A. The interface shear strength test results shall equal or exceed the peak and post-peak strengths values listed in the table below.

<table>
<thead>
<tr>
<th>Normal Stress (psi)</th>
<th>Peak (psi)</th>
<th>Post Peak (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>854</td>
<td>448</td>
</tr>
<tr>
<td>44</td>
<td>1708</td>
<td>896</td>
</tr>
<tr>
<td>89</td>
<td>3416</td>
<td>1792</td>
</tr>
</tbody>
</table>

1. The following interfaces shall be tested in a soaked condition:
   a. Drainage Geocomposite/Geomembrane;
   b. Geomembrane/GCL; and
   c. Geomembrane Liner/Screened Till.

2. For the Geomembrane Liner/Screened Till interface, the Screened Till shall be compacted to 95 percent of the maximum density as determined by ASTM D698 at a water content one to two percent above the optimum. The recompacted Screened Till shall be allowed to condition for no less than 36 hours prior to testing.

3. For geosynthetic/soil interface tests (including those with GCL), the geosynthetic shall be placed in the testing device first, and the soil placed/compactd above. Care shall be take not to damage the underlying geosynthetic.

4. The Geomembrane/GCL test setup shall be hydrated for 24 hours under a normal stress of 5 psi. After soaking, the sample should be loaded to the at least 10 psi and allowed to consolidate for 48 hours prior to testing.

5. Maximum shear displacement rates shall be as follows:
   a. Drainage Sand/Drainage Geocomposite – 0.04 in./minute
   b. Drainage Geocomposite/Geomembrane – 0.2 in./minute
   c. Geomembrane/Geosynthetic Clay Liner (GCL) – 0.04 in./minute
   d. GCL/Drainage Sand – 0.04 in./minute – 0.04 in./minute
   e. Geomembrane/Screened Till – 0.04 in./minute.
2.03 REVIEW OF TEST RESULTS

A. The CQA Consultant shall review the interface strength testing reports to evaluate whether the test results meet the minimum requirements of this specification.

B. The Contractor shall retest failed interfaces. Testing may be done at the same laboratory or another independent laboratory. Retesting shall be performed at the Contractor's expense. Retest results shall be reviewed by the CQA Consultant and/or Engineer.

[END OF SECTION 02560]
SECTION 02710

CULVERTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. CONTRACTOR shall provide all labor, materials, tools, and equipment and perform all operations necessary to furnish, install culverts, including necessary joints and connections as required. Culverts shall consist of sections of pipe of the kinds and sizes shown on the Drawings and as specified, laid on a firm foundation in accordance with these Specifications.

1.2 SUBMITTALS

A. CONTRACTOR shall submit manufacturer's technical product data and installation instructions for culvert piping and appurtenances to ENGINEER in advance of delivery of materials to the site.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Inspection of Material
   1. When delivered to the site and prior to unloading, CONTRACTOR shall inspect all pipe and accessories for loss, damage, or lack of specified identification and markings.
   2. Any defective or improper material shall be immediately marked and shall not be unloaded.

B. Storage
   1. In shipping, storing, and installing, pipe shall be kept in a sound, undamaged condition. It shall at all times be handled with care and shall not be dropped, dumped, or bumped against any other object. Any material(s) damaged shall be marked and immediately removed from the job site.

C. Defective Materials
   1. Materials found at any time during the progress of the work to have cracks, flaws, or other defects will be rejected and marked, and CONTRACTOR shall promptly remove such defective material from the work site.
PART 2 – PRODUCTS

2.1 PIPE AND FITTINGS

A. Polyethylene (PE) Pipe
   1. PE pipe shall conform to AASHTO M294.
   2. Polyethylene flared end sections shall be fabricated by the same manufacturer as the pipe, and shall be intended for use with the pipe provided.
   3. Split couplers shall be designed as soil-tight with a gasket.

B. Corrugated Polyethylene Pipe (CPP)
   1. The culvert pipe shall be made of high density polyethylene material conforming to the requirements of cell classification 435400C as defined in ASTM D3350. The pipe shall have smooth inner walls.
   2. HDPE End Sections: The method of fabrication and materials used shall conform to the applicable requirements of AASHTO M294. The connection of the end section to the pipe shall be made in accordance with the manufacturer’s recommendations.
   3. Coupling bands shall be provided by the manufacturer of the pipe and shall meet the soil-tight requirements of AASHTO M294.

C. Corrugated Metal Pipe (CMP)
   1. Corrugated metal pipe shall be metallic coated (galvanized or aluminized) corrugated metal pipe with locking corrugated bands. The pipe shall conform to AASHTO M36.
   2. The minimum thickness of the metal culvert sheets shall be 0.064 inches.
   3. Pipe arch shall be of sufficient gauge for the size specified to support E80 live load with a minimum of 24 inches of soil cover.
   4. Metal End Sections: Metal end sections shall be fabricated from galvanized or aluminized steel. The connection of the metal end section to the pipe shall be made in accordance with the manufacturer’s recommendations.

D. Reinforced Concrete Pipe (RCP) shall conform to Class IV in accordance with ASTM C76.

PART 3 – EXECUTION

3.1 GENERAL

A. Pipes and appurtenances shall be installed true to lines, grades, and locations indicated on the Drawings. Any deviations must be approved by ENGINEER before installation. CONTRACTOR shall furnish all labor, materials, and tools to establish and maintain all lines and grades. Benchmarks and reference points as required for control of the work are shown on the Drawings or will be provided to CONTRACTOR.
3.2 BACKFILL AND COMPACTION

A. Backfill and compaction shall be as specified in Section 02200.

3.3 PIPE BEDDING CONDITIONS

A. Pipe laid in open trench excavations shall be bedded in and uniformly supported over their full length on compacted Drainage Sand.

3.4 INSTALLATION OF PIPE AND FITTINGS

A. After the trench bedding has been brought to the proper grade the pipe shall be laid. Pipe installation shall be done only in the presence of ENGINEER, and the CONTRACTOR shall give ample notice of schedule of pipe laying operations to ENGINEER.

B. All pipe and fittings shall be carefully lowered into the trench by hand or with appropriate equipment. Pipe becoming cracked or otherwise damaged during or following installation shall be marked by CONTRACTOR or ENGINEER and removed from the site.

C. Pipes shall be laid true to grades shown on the Drawings or as directed by Engineer. Each section of pipe shall rest upon the pipe bed for the full length of its barrel, with recesses excavated to accommodate joints. Blocking will not be permitted. Any pipe that has its grade or joints disturbed after being laid shall be taken up and re-laid.

D. The pipe ends shall be thoroughly cleaned before the joint is made. All connections shall be made in accordance with instructions supplied by the manufacturer.

[END OF SECTION 02710]
SECTION 02830
TOPSOIL, HYDROSEEDING, AND TURF ESTABLISHMENT

PART 1 – GENERAL

1.1  SCOPE OF WORK

A.  Furnish all labor, materials, equipment and incidentals required to place topsoil, finish grade, furnish and apply lime and fertilizer, furnish and hydraulically apply seed and mulch, and maintain all seeded areas as specified herein. Topsoil will be available for use by the CONTRACTOR on-site. CONTRACTOR shall load and haul topsoil to the project area.

B.  CONTRACTOR shall seed all areas disturbed by his operations. All areas disturbed or not having sufficient vegetation to prevent erosion shall be seeded.

C.  Topsoil, Hydroseeding, and turf establishment shall comply with the requirements within the Alteration of Terrain Permit.

1.2  SUBMITTALS

A.  CONTRACTOR shall submit the proposed seed mix including the manufacturer's certificate of compliance to ENGINEER for review prior to seeding.

1.3  SAMPLES AND APPROVAL OF MATERIAL

A.  Samples of all materials shall be submitted for inspection and acceptance upon ENGINEER's request.

B.  Seed bag tags shall be provided to the ENGINEER at the time of seeding.

PART 2 – PRODUCTS

2.1  MATERIALS

A.  Fertilizer and loam shall be commercial grade that is consistent with the State Cooperative Extension's recommendations for establishing a healthy vegetative cover as described herein. It shall be delivered to the Site in the original unopened containers, each showing the manufacturer's guaranteed analysis. Fertilizer shall be stored so that when used it shall be dry and free-flowing.

B.  Seed shall be as specified on the Drawings

C.  The seed shall be furnished and delivered premixed in the specified proportions. The manufacturer for each seed type shall provide a manufacturer's certificate of compliance to the specified mix. These
certificates shall include the guaranteed percentages of purity, weed content, and germination of the seed, and also the net weight and date of shipment. No seed may be sown until CONTRACTOR has submitted the certificates to ENGINEER.

D. Mulch shall be specially processed cellulose fiber containing no growth or germination inhibiting factors. It shall be manufactured in such a manner that after agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogenous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture.

E. Fertilizer, seed, and lime shall be furnished in new, clean, sealed, and properly labeled bags, with the following information clearly marked:
   1. Manufacturer name
   2. Type
   3. Weight
   4. Guaranteed analysis

PART 3 - EXECUTION

3.1 APPLICATION

A. Unless otherwise shown on the Drawings, topsoil shall be placed to a minimum thickness of 4 inches.

B. For all areas to be seeded:
   1. Lime and fertilizer shall be applied uniformly over the area at the rate noted on the Drawings. Modifications to the application rate and/or fertilizer type may be made based on recommendations from the State Cooperative Extension based on topsoil testing.
   2. Seed shall be applied uniformly over the area at the rate noted on the Drawings.

C. The application of fertilizer and lime shall be performed hydraulically in one operation with hydroseeding. CONTRACTOR will be responsible for cleaning all structures and paved areas of unwanted deposits.

D. The application of mulch is to be by pneumatic blower.

3.2 INSTALLATION

A. The subgrade of all areas to be covered with topsoil and seeded shall be raked and all rubbish, sticks, roots and stones larger than 3 inches shall be removed. Subgrade surfaces in all areas shall be tracked immediately after fine grading and raking has been completed. Tracking is to be performed with bulldozers operating in the direction of water flow. The tracks of the bulldozers are to have grousers of sufficient height to leave visible depressions in the subgrade. The depressions are to be perpendicular to the direction of water flow to reduce erosion potential until topsoil is placed. During the tracking, all depressions caused by settlement or tracking shall be filled with additional
topsoil and the surface shall be regraded and tracked until an even finished grade is created.

B. Subgrades shall be observed and approved by ENGINEER before topsoil is placed. After topsoil has been spread and fine graded, all large stiff clods, lumps, brush, roots, stumps, litter and other foreign material shall be removed from the area covered with topsoil and disposed of by CONTRACTOR. The entire area where topsoil has been placed shall then be tracked as indicated in paragraph 3.2.A above.

C. Application of fertilizer, lime, seed and mulch shall only be performed during those periods within the seasons that are normal for such work as determined by the weather and locally accepted practice, and as approved by ENGINEER. CONTRACTOR shall hydroseed and hay mulch only on a calm day.

D. Contractor shall schedule seeding and fertilizing activities with ENGINEER and OWNER.

E. Lime and fertilizer are to be spread hydraulically in one operation with the hydroseeding.

F. Seed shall be sown within five (5) days following soil preparation, unless otherwise approved by ENGINEER or OWNER. Seed shall be applied hydraulically at the rates and percentages indicated. The spraying equipment and mixture shall be designed so that when the mixture is sprayed over an area, the lime, fertilizer, and seed shall be equal in quantity to the specified rates. Prior to the start of Work, CONTRACTOR shall provide ENGINEER and OWNER with a certified statement for approval as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the hydroseeder.

G. Hay or straw mulch shall be tracked as described in Paragraph 3.2.A.

H. When protection of newly graded areas is necessary at a time outside of the normal seeding season, CONTRACTOR shall protect those areas by whatever means necessary (such as straw) or by other measures as approved by ENGINEER and OWNER.

3.3 MAINTENANCE AND PROVISIONAL ACCEPTANCE

A. CONTRACTOR shall keep all seeded areas watered and in good condition, shall reseed if and when necessary until a good, healthy, uniform growth is established over the entire area seeded, and shall maintain these areas in an approved condition until provisional acceptance.

B. On slopes, CONTRACTOR shall protect against wash outs by an approved method. Any wash out that occurs shall be regraded and reseeded at CONTRACTOR's expense until a good sod cover is established.
C. ENGINEER or OWNER will observe work for provisional acceptance at the end of the eight (8) week grass maintenance period, and upon the written request of CONTRACTOR, which must be received at least ten (10) days before the anticipated date of observation.

D. A satisfactory stand will be defined as a section of grass of 10,000 square feet or larger that has:
   1. No bare spots larger than three square feet.
   2. No more than ten percent of total area with bare spots larger than one square foot.
   3. No more than fifteen percent of total area with bare spots larger than 6 inches square.
   4. The observations by ENGINEER or OWNER will determine whether maintenance shall continue in any area or manner.

F. After all necessary corrective work and cleanup has been completed, ENGINEER or OWNER will acknowledge the provisional acceptance of the seeded areas. CONTRACTOR’s responsibility for maintenance of seeded areas, or parts of seeded areas shall cease on receipt of provisional acceptance.

3.4 GUARANTEE PERIOD AND FINAL ACCEPTANCE

A. All seeded areas shall be guaranteed by CONTRACTOR for not less than one full year from the time of provisional acceptance.

B. At the end of the guarantee period, ENGINEER or OWNER will make observations upon written request submitted by the CONTRACTOR at least ten days before the anticipated date. Seeded areas not demonstrating satisfactory stands as outlined above, as determined by ENGINEER or OWNER, shall be renovated, reseeded, and maintained meeting all requirements as specified herein.

A. After all necessary corrective work has been completed, ENGINEER or OWNER shall acknowledge in writing the final acceptance of the seeded areas.

[END OF SECTION 02830]
SECTION 02950
CLEANUP AND SITE RESTORATION

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals necessary to complete the work under this Section including operations which cannot be specified in detail as separate items, but can be sufficiently described as to the kind and extent of Work involved.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.1 CLEANUP

A. During the course of the work, CONTRACTOR shall keep the site of his operations in as clean and neat a condition as is possible. Lumber, equipment, temporary structures, and other refuse remaining from the construction operations shall be removed from the site. CONTRACTOR shall leave the entire site in a neat and orderly condition.

B. It shall be CONTRACTOR's responsibility to dispose of all excess material and residue resulting from construction operations. Excess materials consisting of soil, rock or boulders shall be disposed of by CONTRACTOR in on-site areas designated by OWNER.

C. Upon establishment of vegetation, CONTRACTOR shall remove all silt fence/erosion control structures under the direction of OWNER.

3.2 INCIDENTAL WORK

A. CONTRACTOR shall do all incidental Work not otherwise specified but obviously necessary for the proper completion of the Contract in accordance with the Drawings and Specifications.

[END OF SECTION 02950]
CONTENTS

DIVISION 3 – CONCRETE

Section C3300 – Cast-in-Place Concrete
Section C3310 – Concrete Coatings
Section C3400 – Precast Concrete Structures
SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. All cast-in-place concrete used in the installation of footings and foundation walls.

B. All cast-in-place concrete used in the construction of floor slabs and sideslope riser building walls.

D. Reinforcing steel, formwork, and concrete accessories required for the completion of the work.

E. Required material or equipment to be installed during concrete construction.

1.2 QUALITY ASSURANCE

A. Applicable Codes, Standards and Specifications.
   1. American Society for Testing and Materials (ASTM)
   2. American Concrete Institute (ACI)

B. Tests
   1. Tests for all materials shall be current within the past 12 months prior to use in this work.
   2. Make test results and data available to ENGINEER upon request.

1.3 SUBMITTALS

A. Name and location of concrete suppliers.

B. Concrete mix design indicating amount of all ingredients for each class of concrete to be used in the work.

C. Product data for pipe boots, floor sump, and grating.

D. Field and compression test results on samples collected during concrete placement.

PART 2 - PRODUCTS

2.1 CEMENT

A. Portland cement shall conform to ASTM C50, Type II.
2.2 FINE AND COARSE AGGREGATES

A. Comply in all respects to ASTM C33.

B. Maximum size of coarse aggregates:
   2. Floor slabs and walls – ¾ inch.

C. Coarse aggregate for concrete used for floor slabs shall be crushed rock or
screened, washed gravel, and shall be clean, hard and free of clay, organic and
other deleterious matter.

D. Fine aggregate shall be sand which is washed and free of clay, organic, and other
deleterious matter.

2.3 WATER

A. Use public potable water supply.

2.4 ADMIXTURES

A. Water-reducing – Conform to ASTM C494, Type A.

B. Air-entraining – Conform to ASTM C260.

2.5 REINFORCING STEEL

A. Reinforcing steel bars shall be deformed new billet steel conforming to ASTM
   A615, Grade 60. Wire fabric shall be cold drawn steel conforming to ASTM A185.

B. Wall Anchor Bolts
   1. Zinc coated steel by the hot-dip process after fabrication to a minimum of
      1.25 ounces of zinc per square foot of surface when tested in accordance with
      ASTM A90.
   2. Rigid steel anchors not less than ½-inch diameter by 24 inches long with one
      end bent not less than 2 inches, and the long leg threaded at least 6 inches.

2.6 EXPANSION JOINT MATERIAL

A. Expansion joint material shall be resilient, waterproof, non-extruding type
   premolded closed cell polyethylene foam, ¾-inch minimum thickness, and of the
   width required for full depth joints. The expansion joint material shall include a
   strip-off removable edge.
2.7 MEMBRANE CURING COMPOUND

A. Membrane curing compound shall be pigmented and conform to the requirements of ASTM C309.

2.8 GROUT

A. All grout shall be non-shrink, non-metallic, non-gas forming, pre-blended and ready for use requiring only the addition of water.

2.9 CONCRETE MIX DESIGN

A. Mix design shall be established by the concrete supplier based on a proven strength record for concrete made with similar ingredients and conform to ACI 211, except as specified herein, using approved materials.

B. All concrete shall have a compressive strength of at least 4,000 pounds per square inch at 28 days unless otherwise noted.

C. Maximum Slump
   1. General – 4 inches
   2. Floors, and walls – 3 inches

D. Except where otherwise specified, all concrete exposed to the weather shall be air-entrained in the range of 5 percent to 7 percent.

2.10 FLOOR SUMP

A. Sideslope riser building floor sump(s) shall be cast-in-place monolithically with the floor slab. The sump top opening shall be as indicated on the Drawings.

B. Provide a minimum 1-inch wide lip all around the sump of sufficient depth to support grating flush with the floor surface. Grating shall be structural fiberglass floor grating.

2.11 SUMP GRATING

A. The sump grating shall be designed for a normal live load of 100 pounds per square foot. Maximum deflection under a 100 pounds per square foot load shall not exceed 3/4-inch or 1/250th of the span, whichever is less.

B. Individual grating panels shall not exceed a total weight of 100 pounds unless otherwise shown or approved.

C. The walking surface of the grating shall have a slip resistant finish texture.
D. The grating must be removable to allow access to sump and sump pump (if installed) for cleanout and maintenance operations.

2.12 GRATING SUPPORTS

A. Grating shall be supported on all sides by channel or angle members of the same material as the grating. Supports shall be securely anchored to the sides of the floor slab. All anchor hardware shall be stainless steel.

B. Grating shall be secured to their supports by removable anchors.

PART 3 – EXECUTION

3.1 BATCHING AND MIXING

A. Batching
   1. Conform to ACI304.
   2. Use only approved materials.

B. Mixing and Delivering – Conform to ASTM C94.

3.2 PLACING CONCRETE

A. Conform to ACI 304.

B. Forms shall be substantially free from surface defects and sufficiently tight to prevent leakage of mortar. They shall be properly braced and tied so as to maintain position and shape during and after placing of concrete.

C. CONTRACTOR shall furnish and place reinforcing steel and wire, pipe boots, expansion joints, sump, grating shelf, etc. as shown on the Drawings.

D. All concrete shall be thoroughly consolidated by use of vibrators.

E. No concrete shall be deposited under water without written permission of ENGINEER, and then only in accordance with proper tremie techniques.

F. Cold Weather Concreting – Conform to ACI 306.

G. Hot Weather Concreting – Conform to ACI 305.

H. Sideslope riser building floor and floor sump as indicated on the Drawings.

3.3 FINISHING

A. All formed concrete surfaces to be exposed shall be given a rubbed finish.
B. Floors, and similar surfaces shall be given a float finish.

C. Floor slabs shall be hand-floated and given a smooth finish.

3.4 CURING

A. Concrete shall be maintained in a moist condition for seven (7) days using methods that will insure complete and continuous saturation.

B. Floor slabs may be cured by the use of membrane curing compound applied in accordance with the manufacturer’s directions.

3.5 EXPANSION JOINTS

A. Provide where indicated around floor slab. Fill joints with a permanently flexible preformed filler material and a urethane sealant.

3.6 FORMS

A. Construct to the shape, lines, and dimensions of members indicated and make sufficiently rigid to prevent deflections which may result in cracking or other damage to supported masonry. Do not remove until members have cured.

B. Remove forms and form ties and clear all loose material from the surface of the concrete. Remove surface lumps, and fill voids on faces of concrete surfaces that are to receive asphalt dampproofing or paint, are to be in contact with expansion joint material, or will be visible on the interior of the sideslope riser building.

3.7 NON-SHRINK GROUTING

A. For openings that are left in new concrete or where made in existing concrete for the insertion of wall castings, pipes or other fixtures, the space around these items shall be made watertight by completely filling with a non-shrink grout.

B. All work shall be done in strict accordance with the material manufacturer’s recommendations.

3.8 BONDING AND ANCHORING

A. Structurally anchor walls to each other. Anchor sills to concrete wall with threaded anchor bolts embedded in the concrete. Provide washers and nuts to anchor sills to concrete wall. Maximum spacing of anchors shall be 6 feet.
3.9 PROTECTION OF WORK

A. New concrete shall be protected by barricades during curing to prevent damage by vehicular or pedestrian traffic. Damaged concrete shall be repaired or replaced at CONTRACTOR’s expense.

3.10 QUALITY CONTROL

A. CONTRACTOR shall be solely responsible for the quality control of all concrete and shall retain an independent testing laboratory to conduct testing of the concrete for slump, air content and compression.

B. Concrete which does not meet the requirements of these specifications may be rejected by ENGINEER, and shall be removed and replaced at CONTRACTOR’s expense.

3.11 SIDESLOPE RISER PIPE PENETRATIONS

A. Neatly fill annular space between concrete wall and sideslope riser pipes with non-shrink grout.

3.12 CLEANING

A. During cleaning operations, protect work which may be damaged, stained, or discolored.

[END OF SECTION 03300]
SECTION 03310

CONCRETE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This specification is for the coating to be used for the concrete within the sump riser building and the interior surfaces of the concrete manholes.

1.2 QUALITY ASSURANCE

A. CONTRACTOR qualifications: CONTRACTOR shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. CONTRACTOR shall maintain qualified personnel who have received product training by a manufacturer’s representative.

B. CONTRACTOR shall install materials in accordance with all manufacturer safety and weather requirements or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Safety Data Sheets (SDS) for complete handling recommendations.

1.3 DELIVERY, STORAGE, AND HANDLING

A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

C. Condition the specified product as recommended by the manufacturer.

1.4 CONDITIONS

A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. A minimum application temperature of 40 degrees (°) Fahrenheit (F) and rising is required.

B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified material.

1.5 SUBMITTALS

A. Submit copies of manufacturer’s literature to ENGINEER at least 7 days prior to delivery to the site, including Product Data Sheets and appropriate SDS.
1.6 WARRANTY

A. Provide a written warranty from the manufacturer against defects of materials for a period of five (5) years, beginning with date of substantial completion of the project.

PART 2 - PRODUCTS

2.1 EPOXY RESIN COATING

A. Sikagard 62, as manufactured by Sika Corporation. No substitutions will be allowed.

B. Granules for slip-resistance shall be supplied by the manufacturer of the specified product and shall be able to be mixed into the coating and shall not settle during application. Granules shall be used for the floor coating of the sump riser building.

C. Color – Grey.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. Substrate must be clean, sound, and free of surface contaminants. Remove dust, laitance, grease, oils, curing compounds, form release agents and all foreign particles by mechanical means. Substrate shall be in accordance with International Concrete Repair Institute (ICRI) Guideline No. 310.2 for coatings.

3.2 MIXING AND APPLICATION

A. Mixing: Premix each component. Proportion equal parts by volume of Component A and Component B into a clean, dry mixing pail. Mix thoroughly for at least 3 minutes with a Sika paddle on a low-speed (400-600 rpm) drill. Mix only that quantity of material that can be used within its pot life (35 minutes at 73°F). To minimize color difference, blend two complete Component Bs together. Use only one of the blended Component Bs to mix with Component A. After the first Component B has been used, blend the second Component B with a new Component B and repeat the above procedure for the entire application.

B. Placement Procedure: The epoxy resin coating shall be applied only to approved, prepared surfaces with high-quality brushes, rollers, or spray equipment. Coating shall be applied at ambient and substrate temperatures between 50 and 90° F. Application thickness shall be between 4 and 7 mils per coat. Subsequent coats shall be applied within 48 hours of the previous
coat. Care is to be taken on vertical and overhead surfaces to avoid sags or runs. If this occurs, it must be sanded out and the area re-coated. If coating of horizontal surfaces that will receive traffic is specified, a slip-resistant aggregate, Sikagard 62 Granules, shall be incorporated into the mixed epoxy resin coating at $\frac{1}{2}$ lb/gallon.

C. When applying the coating, if possible never stop the application until the entire surface has been coated. If possible always discontinue at an edge, corner, or joint. Never let a previously coated film dry. Always coat into wet film. Always apply the coating at a 45° angle to an edge, corner, or joint.

D. Adhere to all limitations and cautions for the epoxy resin as stated in the manufacturers printed literature.

3.3 CLEANING

A. The uncured epoxy resin coating can be cleaned from tools with an approved solvent. The cured epoxy resin coating can only be removed mechanically.

B. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

[END OF SECTION 03310]
SECTION 03400

PRE-CAST CONCRETE STRUCTURES

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. CONTRACTOR shall furnish all materials, labor, tools and appurtenances required to complete the pre-cast structures as described herein and/or shown on the Drawings.

1.2 DESIGN REQUIREMENTS

A. Pre-cast concrete structures shall be constructed of specified materials to the sizes, shapes and dimensions and at the locations shown on the Drawings or as otherwise directed by ENGINEER. The height or depth of the structures will vary with the location, but unless shown otherwise on the Drawings, shall be such that the inverts and top of the structure will be at the designed elevations.

1.3 SUBMITTALS

A. Complete shop drawings and engineering data on frames, covers, valves (if indicated on the Drawings), trash racks (if indicated on the Drawings), and the pre-cast concrete structures themselves at least 10 days prior to fabrication.

B. CONTRACTOR shall submit detailed drawings showing layout of components and openings within pre-cast concrete structures. The pre-cast concrete structures shall have dimensional callouts and show:
   1. wall penetrations;
   2. piping; and
   3. manway openings/covers including fastening and sealing mechanism, as applicable.

C. Separate submittals for the equipment to be installed or mounted on structures shall be submitted at same time as submittals related to precast concrete structures as described in above paragraphs.

1.4 QUALITY ASSURANCE

A. After delivery to the site, any materials that have been damaged in transit or are otherwise unsuitable for use in the Work shall be rejected and removed from the site at no cost to OWNER.
PART 2 - PRODUCTS

2.1 MATERIALS AND CONSTRUCTION

A. Concrete and Reinforcement
   1. Concrete used in construction of the structures shall be Class “AA” concrete.
   2. Reinforcing steel bars shall be deformed new billet steel conforming to ASTM A615, Grade 60. Wire fabric shall be cold drawn steel conforming to ASTM A185.

B. Mortar: Mortar for manhole construction shall be sand-cement mortar composed of one part Portland cement to two parts clean sand conforming to ASTM C144.

C. Pre-cast Concrete Structures
   1. Pre-cast concrete structures shall consist of pre-cast reinforced concrete sections conforming to the details as shown on the Drawings.
   2. Pre-cast concrete sections shall be manufactured, tested and marked in accordance with the latest provisions of ASTM C478.
   3. The minimum 28-day compressive strength of the concrete for all sections shall be 4,000 psi.
   4. The maximum allowable absorption of the concrete shall not exceed eight percent of the dry weight.
   5. The circumferential reinforcement in the riser sections, conical top sections and base wall sections shall consist of one line of steel and shall be not less than 0.17 square inch per lineal foot.
   6. The ends of each reinforced concrete manhole riser section and the bottom end of the manhole top section shall be so formed that when the manhole risers and the top are assembled, they will make a continuous and uniform manhole.
   7. Unless otherwise approved by ENGINEER, joints of the manhole sections shall be of the tongue and groove type. Sections shall be joined using rubber gaskets conforming to the applicable provisions of ASTM C443, latest revision, or filled with an approved preformed plastic gasket meeting the requirements of Federal Specifications SS-S-00210, “Sealing Compound, Preformed Plastic for Pipe Joints,” Type 1, Rope Form.
   8. Each section of the pre-cast structures shall have no more than two holes for the purpose of handling and laying. These holes shall be tapered and shall be plugged with rubber stoppers or mortar after installation.

D. Frames and Covers
   1. Manway frames, covers and grates shall be of the size and in the location shown on the Drawings or equivalent approved by ENGINEER. Where specified, the frame and cover shall be ductile iron, easily removable, and equipped with handles.
2. Solid manway covers shall be labeled with 3-inch high letters in the center of the covers. Structures associated with the leachate management system, electrical system, and stormwater management system shall be stamped “SEWER”, “ELECTRIC”, and “DRAIN”, respectively.

E. Wall Penetration Seal
1. Wall penetration seal for Pre-Cast Concrete structures shall be CDS Sealing Systems or equivalent approved by ENGINEER.
2. Wall penetration seal shall be certified by the Manufacturer to be compatible between the approved pre-cast concrete structure and piping to provide a watertight seal when installed in accordance with the Manufacturer’s installation procedures.

PART 3 – EXECUTION

3.1 CONSTRUCTION OF PRE-CAST CONCRETE STRUCTURES

A. Place 1½-inches of crushed stone to the thickness shown on the Drawings prior to installing the structure for level bedding.

B. After the base section has been set, the pre-cast sections shall be placed thereon, with care being exercised to install the incoming and outgoing pipes into the wall of the structure at the required elevations.

C. Where called for, the cast iron frame for the cover shall be set at the required elevation and properly anchored to the masonry as depicted on the Drawings.

D. Trash racks and valves (if indicated on the Drawings) shall be installed in accordance with the manufacturer’s recommendations.

[END OF SECTION 03400]
CONTENTS

DIVISION 6 – WOOD AND PLASTIC

Section 06210 – Wood Framing and Insulation
SECTION 06210

WOOD FRAMING AND INSULATION

PART 1 – GENERAL

1.1 SCOPE

A. Section includes:
   1. Wood products used for the sump riser building and panel boards.
   2. Fasteners.
   3. Ceiling insulation.

1.2 SUBMITTALS

A. CONTRACTOR shall submit to the ENGINEER shop drawings for the proposed Sump Riser Building stamped by a Professional Engineering licensed to practice structural engineering in the State of New Hampshire that depict the foundation, block masonry, reinforcement, wood framing, insulation, and other elements required for a complete construction.

B. CONTRACTOR shall submit to the ENGINEER information for proposed appurtenances, including but not limited to, leveling slate and steel shims, expansion bolts, threaded studs, non-shrink cement mortar, plate washers and nuts, and pressure treated members for sills.

1.3 DELIVERY, STORAGE AND HANDLING

A. Deliver lumber, plywood, trim, and millwork to the job site in an undamaged condition.

B. Stack materials to ensure ventilation and drainage. Protect against dampness before and after delivery.

C. Store materials under cover in a well-ventilated enclosure and protect against extreme changes in temperature and humidity. Do not store products in the sump riser building.

1.4 PERMITS

A. CONTRACTOR is responsible for retaining a structural engineer to design the sump riser building in accordance with applicable building regulations.

B. CONTRACTOR shall obtain all local building and other permits required prior to construction implementation.
PART 2 - PRODUCTS

2.1 FRAMING MATERIALS

A. Framing Lumber
   1. Douglas Fir, No. 2; Southern Pine, medium grain, No. 2; or other lumber product having allowable unit stresses not less than 575 psi unit stress in bending (Fb) with 1,400,000 psi modulus of elasticity (E). Framing lumber not carrying calculated stresses shall be WCLB Stud Grade Douglas Fir, Southern Pine, or better.

   2. Nominal Framing Member Sizes
      a. Studs: 2 by 4
      b. Rafters: 2 by 6
      c. Plates: 2 by 8

B. Trim, finish, and frames shall be Southern Pine, Ponderosa Pine, White Pine, or Douglas Fir, Grade C in accordance with WCLB

C. Exterior Siding: Vinyl siding style and color to be selected by Owner.

D. Sheathing
   2. Building/panel board interior mounting walls shall be ½-inch thick A-C plywood.
   3. Roof sheathing shall be ⅝-inch thick CDX.

E. Markings
   1. Each piece or each bundle of lumber, millwork, and trim shall be identified by the grade mark of a recognized association or independent inspection agency that is certified by the Board of Review, American Lumber Standards Committee, to grade the species.
   2. Each sheet of plywood shall bear the mark of a recognized association or independent inspection agency that maintains continuing control over the quality of the plywood. The mark shall identify the plywood by species group or span rating, and shall show exposure durability classification, grade, and compliance with PS 1.
   3. Each treated piece shall be inspected in accordance with AWPA M2 and permanently marked or branded by the producer in accordance with AWPA M6, except that lumber which is smaller than 2 by 4 inches or shorter than 36 inches and bundled may be marked on outer faces only.

F. Moisture Content of Wood Products
   1. Furnish air-dry or kiln-dry lumber.
   2. The maximum moisture content of wood products at time of delivery to the job site shall be as follows:
a. Interior finish lumber, trim, and millwork that are 1¾-inches or less in nominal thickness – 12 percent on 85 percent of the pieces and 15 percent on remainder.
b. Exterior treated or untreated finish lumber and trim that is 4 inches or less in nominal thickness – 15 percent.
c. Other Materials – 19 percent.

G. Preservative Treatment of Wood Products
1. Lumber treated in accordance with AWPA C1 and AWPA C2, and plywood in accordance with AWPA C1 and AWPA C9 shall be used on wood members in contact with masonry or concrete. Treatment shall be verified by an approved inspection agency report, or the AWPB LP22 on each piece.
2. Furnish treated lumber for:
   a. All wood members in contact with concrete
   b. All wood members installed below grade, interior or exterior

2.2 FASTENERS

A. Nails and staple shall be size and type best suited for the purpose, in accordance with commonly accepted construction practices. Conform to Fed. Spec. FF-N-15-105 when applicable, and local building codes.

B. Fastener Lengths and Nails
   1. Sheathing - 1-inch into supporting member
   2. Siding – 1½-inches into supporting members
   3. 1-inch thick lumber – minimum 8d nails
   4. 2-inch thick lumber – minimum 16d nails

C. All fasteners shall be hot dipped galvanized.

2.3 INSULATION

A. Ceiling fiberglass insulation shall be thermal resistance value (R-value) R-19, ASTM C 665, paper faced vapor barrier, fiberglass batt minimum 3-1/2-inches thick 5 1/2-inches thick.

B. Sil. Sealer Insulation shall conform to ASTM C665, Type I.

C. Rigid Insulation shall be closed cell extruded polystyrene foam board, tongue and groove edges, as manufactured by Dow Chemical Company. Thickness as indicated on the Drawings.

2.4 SOFFIT VENTS

A. 2-inch diameter, plastic or aluminum.
PART 3 - EXECUTION

3.1 GENERAL

A. Conform to NFP WCD1 unless otherwise indicated or specified. Fit framing lumber and other rough carpentry, set accurately to the required lines and levels, and secure in place in a rigid manner.

B. Do not splice framing members between bearing points. Set joists with the crown edge up.

C. Frame members to accommodate passage of conduits, doors, and fixtures. Do not cut or bore structural members for the passage of ducts or pipes without approval. Repair all members damaged by such cutting or boring by reinforcement with specially formed and approved sheet metal or bar steel shapes, or remove and replace with a new member.

D. Provide as necessary for the proper completion of the work all framing members not indicated or specified.

E. Use slate or steel shims when leveling joists, beams, and girders on masonry or concrete.

F. Drill members for bolting; provide washers under heads and nuts; and draw nuts and bolts up tight.

G. Nailing shall be in accordance with the Recommended Nailing Schedule, NFPA Manual for House Framing.

3.2 FRAMING

A. Stud spacing shall be 24-inches on center. Double studs at all openings.

B. Headers shall be appropriate for the opening to be spanned and satisfy the applicable building code.

C. Anchor all plates resting on concrete with expansion bolts at ends and at intermediate intervals of not more than 6 feet. Power driven threaded studs may be used as an alternate.

3.3 GENERAL FINISH WORK

A. Provide sizes, materials, and designs as indicated and specified. Where practicable, shop assemble and finish items of built-up millwork.
B. Joints shall be tight and constructed in a manner that will conceal shrinkage. Miter trim and moldings at exterior angles and at returns. Material shall show no warp after installation. Install millwork and trim in the maximum practical lengths.

C. Fasten finish work with finish nails. Provide blind nailing where practicable. Set face nails for putty stopping.

D. Install facia, soffits, trim boards, and soffit vents.

3.4 INSTRUMENT PANEL DOORS

A. Set plumb and square. Install hardware and weatherstrip so that door closes tightly, forming weather-tight seal.

B. Instrument panels shall be lagged directly to the panel board using hot-dipped galvanized or stainless steel hex head lag screws or secured to strut channel lagged in a similar manner to the panel board.

3.5 TOP AND SOLE PLATES

A. Install double top plate. Sole plate shall be installed over pressure treated sill.

B. Install sill insulation between sill and top of concrete foundation wall.

C. Set sill level and square and wedge with steel or slate shims; point or grout with non-shrinking cement mortar to provide continuous and solid bearing. Anchor sills to the foundations as indicated. Provide bolts with plate washers and nuts. Bolts in exterior walls shall be zinc-coated.

D. All sills shall be solid runs without butts or laps and anchored as shown. Use pressure treated members in contact with concrete.

3.6 WALL FRAMING

A. Select studs for straightness and set plumb, true, and in alignment. Sizes and spacing of studs shall be as indicated. Double studs at jambs and heads of openings and triple at corners to form corner posts. Frame corner posts to receive sheathing and interior finish. Truss over openings exceeding 4 feet in width or use a header of sufficient depth. Nail studs to plates with minimum two 16-penny nails or fasten with metal nailing clips or connectors. Frame openings for doors, louver and fan.

B. Use plates for walls of the same width as the studs to form continuous horizontal ties. Splice single plates; stagger the ends of double plates. Double top plates in walls built up of two nominal 2-inch thick members. Nail lower members of double top plates and single top plates to each stud and corner post with minimum two 16-penny nails. Nail the upper members of double plates to the
lower members with 10-penny nails, two near each end, and stagger 16 inches on center intermediately between. Nail sole plates through the sills.

3.7 INTERIOR WALL SHEATHING

A. Exterior grade plywood shall be applied with the sanded side facing into building. Extend sheathing over and nail to sill and top plate. Abut sheathing edges over centerlines of supports. Make cuts straight and even. Abut sides and ends closely with no more than a ⅛-inch gap between sheathes. If sheathing is applied horizontally, stagger vertical end joints. Nail panels with 6-penny galvanized nails spaced 6 inches on center along edges of the panel and 12 inches on center over intermediate supports. Install sheathing on walls and ceiling.

B. Install interior trim around doors and other openings

3.8 BUILDING PAPER

A. Install building paper where needed in accordance with the roofing and siding manufacturer’s instructions.

3.9 INSULATION AND ROOF VENTS

A. Install ceiling insulation and soffit vents between rafters. Install insulation in walls and ceiling of sump riser building, but not panel boards.

B. Install insulation in accordance with manufacturer’s instructions. Ceiling insulation should be installed with printed side against ceiling.

C. Surfaces shall be dry, and free of dust, dirt and debris prior to installation of insulation. Remove and replace any insulation that becomes damaged or wet.

D. Install roof ridge vent in accordance with manufacturer’s recommendations.

3.10 FRAMING TOLERANCES

A. Framing members which will be covered by finishes such as plywood sheathing, metal siding, and metal roofing shall be within the following limits:
   1. Plates and sills – ¼-inch in 8 feet from a straight line;
   2. Studs – ¼-inch in 8 feet out of plumb, not cumulative; and
   3. Face of framing members – ¼-inch in 8 feet from a true plane.

[END OF SECTION 06210]

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CONTENTS

DIVISION 8 – DOORS

Section 08100 – Metal Doors and Frames
Section 08712 – Door Hardware
SECTION 08100

METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide metal doors with frames, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.2 SUBMITTALS

A. Submit the following:
   1. Materials list of items proposed to be provided under this Section.
   2. Manufacturers' specifications and other data needed to demonstrate compliance with the specified requirements.
   3. Shop drawings showing details of each frame type, elevations of door designs, details of openings, and details of construction, installation, and anchorage.
   4. Manufacturer's recommended installation procedures

1.3 QUALITY ASSURANCE

A. Use skilled workers who are experienced and are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Unless specifically otherwise approved by ENGINEER, provide all products of this Section from a single manufacturer.

C. Fire Rated Doors and Frames: (required ratings as indicted on the drawings) shall be constructed and tested in accordance with UL-10B and approved by Underwriter's Laboratories or other recognized testing agency having a factory inspection service.

PART 2 - PRODUCTS

2.1 METAL DOORS

A. Acceptable manufacturers
   1. Steelcraft of Cincinnati, Ohio
   2. Pioneer Industries of Carlstadt, New Jersey
   3. Security Metal Products of Ontario, California
   4. Other manufacturers with ENGINEER's approval
B. Provide 1-3/4-inch hollow metal doors of the type and size indicated on the Drawings.

C. Fabricate exterior door, panels and frames from galvanized steel sheet ASTM A653/A653M, G60 or A60.

D. Unless otherwise noted on the drawings, doors shall be reinforced with impregnated kraft honeycomb core, laminated to the inside faces of both steel panels.

E. Doors shall have continuous, vertical, interlocking joints at both the lock and hinge edges. Both edges shall have visible seams.

F. Provide 16-gauge hot dipped galvanized steel for exterior doors and 18-gauge galvanized steel for interior doors.

G. All doors shall have top and bottom, 14-gauge steel reinforcement channels, spot-welded into place. Provide 7-gauge hinge reinforcements, 16-gauge lock reinforcements. Provide 14-gauge closer reinforcements in all doors.

H. Provide steel top caps in all metal doors opening to the exterior.

I. Glazing – Where called for, provide clear, 3/4-inch thick polished wire glass with a diagonal mesh of woven stainless steel wire in sizes as indicated on Drawings.

J. Insulation – Where indicated on Drawings, provide door with polystyrene insulation with an R-value of not less than 7.0.

K. Doors shall be cleaned, phosphatized and finished with one coat of baked-on rust-inhibiting prime paint in accordance with ANSI A250.10.

2.2 STEEL FRAMES

A. Provide metal frames for doors and other openings of types and styles suitable for the doors indicated on the drawings. Conceal fastenings unless otherwise indicated.
   1. 16-gauge galvanized for interior frames
   2. 14-gauge hot dipped galvanized for exterior frames.

B. Minimum thickness of hardware reinforcing plates shall be as follows:
   1. Hinge 7 gauge
   2. Strike reinforcements 16 gauge
   3. Flush bolt reinforcements 12 gauge
   4. Closer reinforcements 12 gauge
   5. Reinforcements for surface mounted hardware 12 gauge.
C. Provide anchors as recommended by the manufacturer.

D. Door Silencers – Except on weather stripped frames, drill stops to receive three silencers on strike jambs.

2.3 FINISH HARDWARE

A. Secure templates from the finish hardware supplier, and accurately install, or make provision for, all finish hardware at the factory.

B. Prepare hollow metal units to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling, and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A15 "Specifications for Door and Frame Preparation of Hardware." Locate finish hardware as shown on final shop drawings.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install doors in accordance with the shop drawings and the manufacturer's installation instructions.

B. Install fire rated doors and frames in accordance with NFPA 80.

C. Placing Frames
   1. Where practicable, place frames prior to construction of enclosing walls and ceilings.
   2. Set frames accurately into position, plumbed, aligned, and braced securely until permanent anchors are set.
   3. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
   4. At in-place construction, set frames and secure to adjacent construction with suitable anchorage devices.
   5. All masonry openings at door bucks and frames in all exterior walls shall be thoroughly caulked.
   6. Door frames shall be adequately anchored, shall be installed plumb and true and shall be perfectly adjusted to operate smoothly.
   7. Doors and all their components and accessories shall be hung with all hardware in perfect working order and alignment. Clearances between door edges and bucks shall be the same around the perimeter and the clearance shall not be less than ½-inch.
8. In areas where a threshold is provided the clearance between the bottom of the door and the threshold shall not exceed 3/8-inch. Where a threshold is not provided, the clearance at the bottom of the door shall be a maximum of 3/4-inch.

3.2 ADJUST AND CLEAN

A. Final Adjustments
   1. Check and readjust operating finish hardware items in hollow metal work just prior to final inspection.
   2. Leave work in complete and proper operating condition.
   3. Remove defective work and replace with work complying with the specified requirements.

B. Immediately after erection, sand smooth all rusted and damaged areas of prime coat, and apply touch-up of compatible air-drying primer.

[END OF SECTION]
SECTION 08712

DOOR HARDWARE

PART 1 – GENERAL

1.1. SECTION INCLUDES

A. Hardware for doors.

B. Thresholds.

C. Weatherstripping.

1.2. COORDINATION

A. Coordinate work of this Section with other directly affected Sections involving manufacturer of any internal reinforcement for door hardware.

1.3. QUALITY ASSURANCE

A. Manufacturers – Companies specializing in manufacturing of door hardware shall have minimum of five years’ experience.

B. Hardware Supplier – Company specializing in supplying commercial and institutional door hardware with five years’ experience and approved by manufacturer.

C. Hardware Supplier Personnel – Employ an Architectural Hardware Consultant (AHC) to assist in the work of this Section.

D. Any opening shown on plans and requiring hardware and not specifically mentioned shall be furnished with hardware corresponding to that of similar openings. Any item of hardware not specifically called for in the hardware schedule but obviously required for proper operation of the openings or compliance with the applicable codes, including handicapped requirements, if not brought to the attention of ENGINEER prior to bid date, is assumed to be included in the hardware supplier's proposal.

1.4. REGULATORY REQUIREMENTS

A. Conform to code for requirements applicable to fire rated doors and frames.

B. Conform to the applicable sections of Chapter 5 of NFPA 101.
1.5. SUBMITTALS

A. Supplier's Hardware Schedule – Submit finish hardware schedule, shop drawings, and product data. Hardware schedules are intended for coordination of the work. Review and acceptance by ENGINEER or OWNER does not relieve CONTRACTOR of his exclusive responsibility to fulfill the requirements as shown and specified.

B. Finish Hardware Schedules – Based on finished hardware indicated, organize hardware schedule into groups or sets showing complete designations of every item required for each door opening.
   1. Number, location, hand, and material of each door opening. (Hands and swings to be determined in relation to key side of opening).
   2. Type, style, function, size, finish, manufacturer's catalog number, and quantity of each hardware item.
   3. Name and manufacturer of each item.
   4. Fastening requirements.
   5. Explanation of abbreviations used if other than DHI abbreviations and symbols.
   6. Special mounting locations and instructions.

C. Furnish an index cross-referencing door number, engineers hardware group and suppliers hardware group.

D. Samples – If requested by ENGINEER, submit one sample of each type of exposed hardware, finished as required, and tagged with full description for coordination with the schedule.

E. Certificate – When requested by ENGINEER, furnish manufacturers' certificates attesting that hardware items conform to the reference under which the items are governed.

F. Operating Instructions – Furnish OWNER with one (1) complete set of installation instructions, including manufacturer's catalog, special adjusting tools and maintenance instructions. One complete catalog shall be furnished for each manufacturer listed in the approved hardware schedule.

G. Templates – The hardware supplier shall provide necessary templates and/or physical hardware to all trades or factories requiring them in order that they may cut, reinforce, or otherwise prepare their material or product to receive the hardware item. If physical hardware is required by any manufacturer, the hardware supplier shall ship them such hardware via prepaid freight in sufficient time to prevent any delay in the execution of their work.
1.6. OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data. Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

1.7. DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under and store in an area where products are protected from damage and the elements.

B. Items damaged in shipment shall be replaced promptly and with proper material without additional cost to OWNER. All hardware shall be handled in a manner to minimize marring, scratching, and damage.

C. Package hardware items individually; label and identify package with door opening code to match hardware schedule.

D. Deliver keys to OWNER by security shipment direct from hardware supplier.

1.8. WARRANTY

A. Provide five-year warranty to also include coverage of door closers.

1.9. MAINTENANCE MATERIALS

A. Provide special wrenches and tools applicable to each different or special hardware component.

B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

PART 2 – PRODUCTS

2.1. GENERAL

A. Fasteners
   1. Furnish the necessary screws, bolts, and other fasteners of suitable size and type to anchor the hardware in position for long life under hard use.
   2. Where necessary, furnish fasteners with expansion shields, toggle bolts, and other anchors approved by the ENGINEER, according to the material to which the hardware is to be applied and according to the recommendations of the hardware manufacturer.
B. Hinges are required to swing 180 degrees. Furnish hinges of sufficient throw to clear the trim. For doors 60 inches or less in height, furnish two hinges and furnish one additional hinge for each 30 inches of height or fraction thereof.

C. Where not supplied by the door manufacturer, furnish silencers for door frames at the rate of three for each single door except weatherstripped doors and doors with light or sound seals.

2.2. ACCEPTABLE MANUFACTURERS

A. Hinges shall be the product of the Stanley Security Solutions, McKinney Products Company, or approved equal.

B. Locks shall be the product of Schlage, Stanley Security Solutions, or approved equal.

C. Door closers shall be the product of LCN closers or approved equal. Sizes to be determined by manufacturer’s recommendations for door size and location.

D. Kickplates shall be as manufactured by Schlage, Baldwin Hardware, or approved equal. All kick and armor plates shall be furnished with Phillips undercut countersunk screws. Truss head screws are not acceptable.

E. Thresholds by Pemko or approved equal as indicated in Schedule.

F. Weatherstrip shall be as supplied by Pemko or approved equal.

2.3. KEYING

A. Supplier to meet with OWNER to determine keying requirements and obtain final instructions.

B. Supply two keys for each lock.

C. Supply master keys in quantities as required by OWNER.

PART 3 - EXECUTION

3.1. INSPECTION

A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.

B. Commencement of installation means acceptance of existing conditions.
3.2. INSTALLATION

A. Install hardware in accordance with manufacturer’s instructions and requirements of DHI.

B. Use the templates provided by hardware item manufacturer.

C. Mount hardware units at heights recommended by DHI-140 (Recommended Locations for Builders Hardware) except as otherwise indicated as required to comply with governing regulations, and except as may be otherwise directed.

D. Conform to ANSI A117.1 and Americans with Disabilities Act (ADA), for positioning requirements for the handicapped.

3.3. ADJUST AND CLEAN

A. Adjust and clean each operating item of hardware and each door to insure proper operation or function of every unit. Lubricate moving parts with type of lubrication recommended by the manufacturer (graphite-type if no other recommended). Replace any unit that cannot be adjusted and lubricated to operate freely and smoothly as intended for the application made.

B. Final Adjustment – Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make a final check and adjustment of all hardware items in such space or area. Clean and relubricate as necessary to restore proper function and finish of hardware and doors.

C. After construction is complete, manufacturer’s representative of closers, locks and other operating hardware as deemed necessary shall visit the site and make adjustments to the equipment to ensure proper functioning.

[END OF SECTION]
CONTENTS

DIVISION 11– EQUIPMENT

Section 11318 – Pumps
SECTION 11318

PUMPS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish and install sump pumps and accessories for pumping leachate and stormwater from the respective collection sumps to the Sump Riser Building, including:
   1. One (1) primary leachate sump pump.
   2. One (1) secondary leachate sump pump.
   3. One (1) cleanout sump pump.
   4. One (1) Riser Building floor sump pump.
   5. Pump carriages, valves, fittings, pump riser pipe, and pump wire.
   6. A secure attachment for submersible pressure transducer on pump carriages.

1.2 SUBMITTALS

A. Submit manufacturers catalog information for the pumps, including pump curves, pump and motor specifications. Contractor shall superimpose system curve information provided by the Engineer on each manufacturer's pump curve submittal.

B. Submit manufacturer's operation and maintenance manuals for pumps.

C. Submit manufacturer's information and drawings for the pump carriages.

1.3 SUBSTITUTIONS

A. Equipment of equal quality, function, and performance may be proposed by CONTRACTOR for substitution by submitting detailed data for review by ENGINEER.

PART 2 - PRODUCTS

NOTICE - All products installed in the Sump Riser Building and below grade structures shall be rated for use in a Class 1, Division 1, Group D atmosphere and installed in accordance with manufacturer recommendations. Explosive concentrations of methane are likely to be found in these areas.
2.1 LEACHATE SUMP PUMPS

A. Submersible pumps shall be designed for continuous operation.

B. Acceptable pump manufacturer and models are specified on the Drawings.

C. Motor shall be squirrel cage induction type designed for submersible operation.

D. Pump bowls, impellers, shaft, guide vanes, housing, and filter screen shall be stainless steel.

E. Seals, bushings and diaphragms shall be Viton.

F. CONTRACTOR shall supply pumps included in the pump schedule included in Part 2.6 below or an equal approved by ENGINEER.

2.2 SUMP RISER BUILDING FLOOR SUMP PUMP

A. Acceptable pump manufacturer and models are specified on the Drawings.

B. Motor shall be squirrel cage induction type designed for submersible operation.

C. Pump bowls, impellers, shaft, guide vanes, housing, and filter screen shall be cast iron, ductile iron, or stainless steel.

D. CONTRACTOR shall supply pumps included in the pump schedule included in Part 2.6 below or an equal approved by ENGINEER.

2.3 LEACHATE PUMP MOTOR AND WIRE

A. Motor shall be supplied by the pump manufacturer, for the specified pump model. Motor shall be 208 volt, 3-phase, 60 Hz.

B. Furnish manufacturer supplied cord of sufficient length to reach the receptacle in the leachate vault. Splices within the sideslope riser shall not be allowed. Provide type SO extra hard usage cord with fittings suitable for Class 1, Division 1, Group D environment. Conductor size shall be as recommended by the manufacturer.
2.4 LEACHATE SUMP PUMP CARRIAGE

A. Pump carriages shall be integral part of the pump assembly provided by the pump manufacturer.

B. Carriage shall be constructed of type 304 stainless steel. Furnish a total of three carriages; a carriage shall be designed for use with each of the leachate pumps specified, but not the stormwater pump.

C. Carriages for all pumps shall be equipped with cable lug. Lug shall be welded to outside bottom surface of carriage, and shall not interfere with movement of the carriage. Lug may be welded to the carriage in the field.

D. Carriages for all pumps shall be equipped with low-profile pressure transducer bracket. Bracket shall be welded to the outside surface of the carriage as low as possible without interfering with the movement of the carriage or damaging the inside surface of the HDPE riser. Bracket may be welded to the carriage in the field.

E. Carriage wheels shall be constructed of Teflon and angled to match the inside diameter of the sump riser pipe.

2.5 LEACHATE PUMP DISCHARGE PIPE, VALVES, AND ACCESSORIES

A. Unless otherwise noted, the discharge pipe shall be polyethylene, ASTM D1248, ASTM D2737, 160 psi pressure rating.

B. Discharge pipe connectors shall be AWWA C-800, Buna-N gasket, “T” Compression style with stainless steel beveled gripper ring and split clamp, size to match discharge pipe. A metal insert shall be used inside the end of the discharge pipe.

C. Hoist cable shall be 3/8-inch diameter stainless steel wire rope.

D. Cable clamps, couplings, lock nuts, washers, and eye bolts shall be stainless steel.

PART 3 – EXECUTION

3.1 INSTALLATION OF LEACHATE PUMPS

A. Secure each leachate pump to pump carriage.

B. Remove check valve assembly from pump. Drill four evenly spaced 3/4-inch diameter holes in check valve disk. Remove burrs, and replace check valve assembly in pump.
C. Secure safety cable to pump carriage. Cable eyes with thimbles shall be installed at both ends. Use three cable clamps at each connection.

D. Carefully install pump/carriage assembly, check valve, discharge piping, pressure transmitter cable and electrical cable in each sideslope riser pipe in a manner which prevents twisting. Assembly should be bundled together and secured at 5-foot intervals with nylon ties. Tape shall not be allowed.

E. Fasten pressure transducer in stainless steel bracket on pump carriage.

F. Conductors shall be secured in a manner that prevents chafing of the insulation or strain on electrical connections.

G. Verify pump is located at bottom of each sump using pre-measured marks on the discharge pipe or safety cable or other approved method.

3.2 PERFORMANCE TESTING

A. If after operating the pumps the motor rotation is reversed, electrical resistances are not within manufacturer's limits, or pump performance is not within limits specified by the manufacturer, CONTRACTOR shall correct the deficiency and retest.

[END OF SECTION 11318]
CONTENTS

DIVISION 15 – MECHANICAL

Section 15210 – High Density Polyethylene Pipe, Fittings, and Appurtenances
Section 15212 – Polyvinyl Chloride (PVC) Pipe, Valves, and Fittings
Section 15310 – Sump Riser Building Pipe, Fittings, and Appurtenances
SECTION 15210

HIGH-DENSITY POLYETHYLENE
PIPE, FITTINGS, AND APPURTEINANCES

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Supply and install high-density polyethylene (HDPE) pipe, fittings, and
appurtenance for the leachate collection and conveyance systems.

1.2 SUBMITTALS

A. CONTRACTOR shall submit to ENGINEER the following:
   1. Manufacturing data listing resin type, cell classification, stock density,
melt flow, flexural modulus, tensile strength, and coloration.
   2. Pipe Dimensions:
      a. Average outside diameter.
      b. Average inside diameter.
      c. Minimum and average wall thickness.
      d. Approximate weight in pounds per foot.
   3. Manufacturer’s instructions for fusing joints.

B. CONTRACTOR shall submit pipe welding certifications for pipe fusion machine
operators prior to beginning fusion operations.

1.3 MANUFACTURER’S QUALITY ASSURANCE

A. The pipe, fittings, and valve manufacturers shall have an established quality
assurance (QA) program responsible for inspecting incoming and outgoing
materials. At a minimum, incoming polyethylene (PE) materials shall be
inspected for density per ASTM D1505, melt flow rate per ASTM D1238, and
contamination. The supplier shall certify all incoming PE materials.

B. The pipe and fittings manufacturer shall have an established QA program
responsible for assuring the long-term performance of materials and products.
Representative samples of PE materials shall be tested against the physical
property requirements of this Specification. Each extrusion line and molding
machine shall be qualified to produce pressure rated products by taking
representative production samples and performing sustained pressure tests in
accordance with ASTM D1598.
C. QA testing for representative pipe and fitting samples shall include:

<table>
<thead>
<tr>
<th>Test</th>
<th>Standard</th>
<th>Pipe</th>
<th>Fittings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ring ESCR</td>
<td>ASTM F1248</td>
<td>Yes</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Sustained pressure at 176°F / 725 psi hoop stress</td>
<td>ASTM D1598</td>
<td>Yes</td>
<td>(f0&gt;100 h)</td>
</tr>
<tr>
<td>Sustained pressure at 73°F / 1600 psi hoop stress</td>
<td>ASTM D1598</td>
<td>Yes</td>
<td>(f0&gt;100 h)</td>
</tr>
</tbody>
</table>

D. All outgoing materials shall be inspected for diameter, wall thickness, length, straightness, out-of-roundness, concentricity, toe-in, inside and outside surface finish, markings, and end cut. Quality control (QC) shall perform tests of density, melt flow rate, carbon content, and carbon dispersion. In addition, samples of the pipe provided shall be tested for hoop tensile strength and ductility by either quick burst per ASTM D1599 or ring tensile per ASTM D2290. Molded fittings shall be subject to x-ray inspection for voids, and tests for knit line strength. All fabricated fittings shall be inspected for fusion quality and alignment.

E. The pipe and fitting manufacturer shall maintain permanent QC and QA records.

F. If manufacturer’s test data is inadequate or unavailable, then OWNER reserves right to reject or require additional tests to satisfy material requirements. The cost of these tests shall be borne by CONTRACTOR.

G. Work shall comply with codes and standards of the Plastic Pipe Institute (PPI).

1.4 DELIVERY, STORAGE, AND HANDLING

A. The pipe and fitting manufacturer shall package products for shipment in a manner suitable for safe transport by commercial carrier. When delivered, a receiving inspection shall be performed by CONTRACTOR, and any shipping damage reported to the pipe and fittings manufacturer. Pipe and fittings shall be handled, installed, and tested in accordance with manufacturer’s recommendations, and the requirements of this Section.

B. Pipe Storage
   1. Store or stack pipe to prevent damage from marring, crushing or puncture. Limit maximum stacking height to 6 feet or manufacturer’s recommended maximum height, whichever is less.
   2. Store in accordance with manufacturer’s recommendations.
C. Pipe Handling
   1. Protect pipe from excessive heat or harmful chemicals.
   2. Handle pipe and use equipment needed to avoid gouging of the pipe surfaces.

PART 2 – PRODUCTS

2.1 PHYSICAL PROPERTIES

A. Materials used for the manufacture of HDPE pipe and fittings shall meet the following physical property requirements:

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Test Procedure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Designation</td>
<td>-</td>
<td>PPI/ASTM</td>
<td>PE 3408</td>
</tr>
<tr>
<td>Material Classification</td>
<td>-</td>
<td>ASTM D1248</td>
<td>III C 5 P34</td>
</tr>
<tr>
<td>Cell Classification</td>
<td>-</td>
<td>ASTM D3350</td>
<td>345464C</td>
</tr>
<tr>
<td>Density</td>
<td>g/cm³</td>
<td>ASTM D1505</td>
<td>&gt;0.940</td>
</tr>
<tr>
<td>Melt Index</td>
<td>g/10 min</td>
<td>ASTM D1238</td>
<td>&lt;0.15</td>
</tr>
<tr>
<td>Flexural Modulus</td>
<td>psi</td>
<td>ASTM D790</td>
<td>110,000 to &lt;160,000</td>
</tr>
<tr>
<td>Tensile Strength at yield</td>
<td>psi</td>
<td>ASTM D638</td>
<td>3,000 to &lt;3,500</td>
</tr>
<tr>
<td>Slow Crack Resistance (PENT)</td>
<td>hours</td>
<td>ASTM F1473</td>
<td>&gt;100</td>
</tr>
<tr>
<td>HDB</td>
<td>psi</td>
<td>ASTM D2837</td>
<td>1,600 @ 23°C</td>
</tr>
<tr>
<td>UV Stabilizer</td>
<td>% Carbon Black</td>
<td>ASTM D1603</td>
<td>2 to 3</td>
</tr>
<tr>
<td>Elastic Modulus</td>
<td>psi</td>
<td>ASTM D638</td>
<td>110,000</td>
</tr>
<tr>
<td>Brittleness Temperature</td>
<td>°F</td>
<td>ASTM D746</td>
<td>&lt;-180</td>
</tr>
<tr>
<td>Vicat Softening</td>
<td>°F</td>
<td>ASTM D1525</td>
<td>255</td>
</tr>
<tr>
<td>Temperature</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal Expansion</td>
<td>in/in/°F</td>
<td>ASTM D696</td>
<td>1 x 10⁻⁴</td>
</tr>
<tr>
<td>Hardness</td>
<td>Shore D</td>
<td>ASTM D2240</td>
<td>64</td>
</tr>
</tbody>
</table>

B. There shall be no evidence of splitting, cracking, or breaking when the pipe is tested.

C. Ring Stiffness Constant (RSC) values for the pipe shall be 90 percent of the nominal.

D. The pipe and fittings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density, and other physical properties.
E. Clean rework or recycled material generated by the manufacturer's own production may be used so long as the pipe or fittings produced meet all the requirements of this Section.

2.2 PIPE AND FITTINGS

A. Dimensions
   1. The nominal inside diameter of the pipe shall be true to the specified pipe size in accordance with ASTM D2513. Standard laying lengths shall be 40 feet + 2 inches.
   2. Fittings such as couplings, wyes, tees, adaptors, etc. for use in laying pipe shall have standard dimensions that conform to ASTM D2513.
   3. Pipe and fittings shall have the Standard Dimension Ratio (SDR) rating indicated on the Drawings.

B. Pipe and fittings shall be produced by the same manufacturer from identical materials meeting the requirements of this Section. Special or custom fittings may be exempted from this requirement.

C. Pipe and fittings shall be pressure rated to meet the service pressure requirements specified. Whether molded or fabricated, fittings shall be fully pressure rated to at least the same service pressure rating as the joining pipe.

D. Molded fittings shall meet the requirements of ASTM D3261 and this Specification. At the point of fusion, the outside diameter and minimum wall thickness of fitting butt fusion outlets shall meet the diameter and wall thickness specifications of the mating system pipe. Fitting markings shall include a production code from which the location and date of manufacture can be determined. Upon request, the manufacturer shall provide an explanation of his production code.

E. Perforated pipe shall meet the same physical properties and requirements of standard solid pipe. Hole spacing and orientation are presented on the Drawing. Sections of perforated pipe shall be fused together with perforations aligned between each section of pipe.

F. Marking
   1. Each standard and random length of pipe and fitting in compliance with this standard shall be clearly marked with the following information:
      a. Manufacturer's Name or Trademark;
      b. ASTM Standard Designation;
      c. Nominal Pipe Size;
      d. Class & Profile Number;
e. Production Code, including Extrusion Date, and Lot or Batch Number; and
f. SDR.

2.3 SOURCE QUALITY CONTROL

A. The pipe and fitting manufacturer shall certify that samples of his production pipe have undergone stress regression testing, evaluation, and validation in accordance with ASTM D2837 and PPI TR-3. Under these procedures, the minimum hydrostatic design basis shall be certified by the pipe and fitting manufacturer to be 1600 psi at 73.4°F and 800 psi at 140°F.

B. Material shall be listed in the name of the pipe and fitting manufacturer by the Plastics Pipe Institute (PPI) in PPI TR-4 with the following Standard Grade ratings:

<table>
<thead>
<tr>
<th></th>
<th>73.4°F</th>
<th>140°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrostatic Design Basis (HDB)</td>
<td>1600 psi</td>
<td>800 psi</td>
</tr>
<tr>
<td>Hydrostatic Design Stress (HDS)</td>
<td>800 psi</td>
<td>400 psi</td>
</tr>
</tbody>
</table>

C. PPI material listing in the name of the resin supplier is not acceptable in meeting this requirement.

D. As the basis of the acceptance of the material, the manufacturer will furnish a certificate of conformance of these Specifications upon request. When prior agreement is being made in writing between the purchaser and the manufacturer, the manufacturer will furnish other conformance certification in the form of affidavit of conformance, test results, or copies of test reports.

E. Physical Test Requirements
   1. Sampling: The selection of the sample of pipe shall be as agreed upon by the purchaser and the manufacturer. In case of no prior agreement, any sample selected by the manufacturer shall be deemed adequate.
   2. Sample size for flattening test will be one sample per size and class of pipe per project.
   3. Conditioning: Conditioning of samples prior to and during test shall be as agreed upon by the purchaser and manufacturer. In case of no prior agreement, the conditioning procedure used by the manufacturer shall be deemed adequate.

F. Test Methods (to be completed by Manufacturer)
   1. Flattening: Three specimens of pipe, a minimum of 12 inches long, shall be flattened between parallel plates in a suitable press until the distance between the plates is 40 percent of the outside diameter of the pipe. The rate of loading shall be uniform and such that the compression is...
completed within 2 to 5 minutes. Remove the load, and examine the specimens for splitting cracking or breaking.

2. Pipe Ring Stiffness Constant: The pipe ring stiffness constant shall be determined using procedures similar to those outlined in ASTM D2412. The stiffness of HDPE pipe is defined in terms of the load, applied between parallel plates, which causes 1 percent reduction of pipe diameter. Test specimens shall be a minimum of two pipe diameters or 4 feet in length, whichever is less.

2.4 GASKETS AND HARDWARE

A. All gaskets shall be ⅛-inch thick, full face Viton with a Shore A durometer rating between 60 and 80.

B. Joint hardware shall be Type 304 stainless steel.

2.5 FITTINGS

A. Fittings shall be manufactured from polyethylene compound having cell classification equal to or exceeding compound used in pipe to ensure compatibility of polyethylene resins.

B. Provide factory-fabricated, dual containment fittings except as indicated below.

C. Fittings shall be from same manufacturer as pipe being provided. OWNER may allow substitution for approved material with use of flanged joint sections.

D. Dimensions of fittings conforming to standard dimensions and tolerances in accordance with ASTM F2206.

E. Fittings shall have the same or higher pressure rating as pipe.

F. Markings
   1. Manufacturer's name or trademark
   2. Nominal size
   3. Type of plastic pipe (i.e., PE 3408)
   4. Standard dimension ratio
   5. Extrusion date, lot number or batch number

G. The Drawings do not show all fittings that may be required. CONTRACTOR to provide all fittings required for a complete installation.
PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

A. Pipe may be rejected for failure to conform to any of the following:
   1. Fractures or cracks passing through pipe wall, except single crack not exceeding 2 inches in length at either end of pipe which could be cut off and discarded. Pipes within one shipment shall be rejected if defects exist in more than 5 percent of shipment or delivery.
   2. Cracks sufficient to impair strength, durability or serviceability of pipe.
   3. Defects indicating improper proportioning, mixing, and molding.
   4. Damaged ends, where such damage prevents making satisfactory joint.
   5. Damage due to handling or installation. Scratches and gouges exceeding five (5) percent of the wall thickness shall be considered excessive, and may be rejected by OWNER or the CQA Consultant.

B. Acceptance of fittings, stubs or other specifically fabricated pipe sections shall be based on visual inspection at job site and documentation of conformance to this Section.

C. Prior to backfilling, CONTRACTOR shall obtain as-built survey information (location and elevation) for the installed pipe at 50-foot intervals, any changes in grade, and the location of all installed fittings.

3.2 INSTALLATION

A. Trench, backfill, and compact in accordance with Specification Section 02200.

B. Heat Fusion of Pipe
   1. Weld in accordance with manufacturer's recommendation for butt fusion methods. The pipe manufacturer shall certify fusion operators.
   2. Butt fusion equipment for joining procedures shall be capable of meeting conditions recommended by pipe manufacturer including, but not limited to, temperature requirements, alignment, and fusion pressures.
   3. For cleaning pipe ends, solutions such as detergents and solvents, when required, shall be used in accordance with manufacturer's recommendations.
   4. Do not bend pipe to greater degree than minimum radius recommended by manufacturer for type and grade.
   5. Do not subject pipe to strains that will overstress or buckle piping or impose excessive stress on joints.
   6. Branch saddle fusions shall be joined in accordance with manufacturer's recommendations and procedures. Branch saddle fusion equipment shall be of a size to facilitate saddle fusion within the trench.
7. Before butt fusing pipe, inspect each length for presence of dirt, sand, mud, shavings, and other debris or animals. Remove debris from pipe.
8. **Cover open ends of fused pipe at end of each working day. Cap to prevent entry by animals or debris.**
9. Use compatible fusion techniques when PEs of different melt indexes are fused together. Refer to manufacturer's specifications for compatible fusion.
10. Fusion welding shall not be performed when pipe ends are exposed to precipitation. CONTRACTOR shall provide temporary welding shelter if necessary.
11. All HDPE cuttings from pipe facing and drilling shall be removed from the pipe network by CONTRACTOR prior to turning the Project over to OWNER. CONTRACTOR shall clean the entire pipe network associated with the Project if HDPE cuttings are encountered in the pipe network by OWNER following completion of the project.
12. **All interior butt-fusion weld beads shall be removed from the pipe (i.e., all HDPE pipe must be de-beaded) in accordance with the manufacturer’s recommendations.**

C. **Flange Jointing**
1. Use on flanged pipe connection sections.
2. Connect slip-on carbon steel backup flanges with galvanized nuts and bolts.
3. Butt fuse fabricated flange adapters to pipe.
4. Observe the following precautions in connection of flange joints.
   a. All fasteners and back-up rings shall be carbon steel below grade, and zinc-plated steel above grade.
   b. Align flanges or flange/valve connections to provide tight seal. Require nitrile-butadiene gaskets if needed to achieve seal. Gaskets are required for flange/valve connections.
   c. U.S. Standard round washers as may be required on some flanges in accordance with manufacturer’s recommendations. Bolts shall be lubricated in accordance with manufacturer’s recommendations.
   d. Tighten flange bolts using a torque wrench in sequence and accordance with manufacturer’s recommendations. CAUTION: Do not over-torque bolts. CONTRACTOR shall use a torque wrench to tighten all flange fasteners.
5. Pull bolts down by degrees to uniform torque in accordance with manufacturer’s recommendation.
6. Protect below grade bolts and flanges by covering with a 6-mil thick PE wrap. Duct tape wrap to HDPE pipe.
7. Electrofusion couplers, where used, shall be installed per manufacturer’s specifications. The outside diameter of the HDPE pipe and face shall be
prepared in accordance with manufacturer's recommendations prior to installing the coupler.

D. Pipe Placement
1. Grade control equipment shall be of type to accurately maintain design grades and slopes during installation of pipe.
2. Remove all standing water in trench before pipe installation.
3. Unless otherwise specifically stated, install pipe in accordance with manufacturer's recommendations.
4. Maximum lengths of fused pipe to be handled as one section shall not exceed 400 feet and shall be placed according to manufacturer's recommendations as to pipe size, pipe SDR, and topography so as not to cause excessive gouging or surface abrasion. Pipe wall gouges deeper than 3/16-inch shall be cause for rejection of the pipe.
5. Cap pipe sections longer than single joining (usually 40 feet) on both ends during placement except during fusing operations.
6. Remove dirt or debris from inside of pipe before backfilling.
7. Notify ENGINEER prior to installing pipe into trench and allow time for ENGINEER's inspection.
8. Correct irregularities found during inspection.
9. Complete connections within trench whenever possible to prevent overstressed connections.
10. Allow pipe sufficient time to adjust to trench temperature prior to testing, segment tie-ins, or backfilling activity.
11. Install reducers adjacent to laterals and tees.
12. To reduce branch saddle stress, install saddles at slope equal to and continuous with lateral piping.
13. Place in trench by allowing minimum 12 inches/100 feet for thermal contraction and expansion.
14. Coordinate construction of pipes near/in access roads with OWNER to limit impediment of OWNER's operations or operations of other contractors.

3.3 PIPE TESTING

A. General
1. The Contractor shall perform hydrostatic pressure tests after placement in trench, in accordance with these specifications.
2. The total test time, including initial pressurization, initial expansion, and time at test pressure shall not exceed eight hours. If the test is not completed in eight hours, the pressure in the test section shall be released and the section allowed to "relax" for at least eight hours before initiating another test.
3. Pipe lines shall be pressure tested in presence of the CQA Consultant. CONTRACTOR to provide ENGINEER with a minimum of 7 days’ notice before performing the test.

4. Provide necessary connections between section of pipe being tested and nearest available source of water or air supply, together with test pressure equipment, meters, pressure gauge, other equipment, materials and facilities necessary to make specified tests.

5. Owner will provide a source of water for testing.

6. Provide bulkheads, flanges, valves, bracing, blocking, or other temporary sectionalizing devices as required to perform the tests safely.

7. Pipe to be tested shall be exposed in the trench, except that bends, reduced pressure rated fittings and components should be buried or restrained. Flange connections shall be visible to check for leaks.

8. Contractor shall notify on-site personnel of the testing schedule, and only allow personnel required to perform the test in the test area for the duration of the test.

9. Contractor shall provide a system without leaks.

B. Test all non-perforated HDPE leachate force main pipe and fittings. Test all PVC pipe in the Sump Riser Building, installed in accordance with specification section 15212 and 15310, using this procedure as well.

C. Preparation
   1. Remove or isolate valves, flow meters, and instruments that may not withstand the required test pressure within the test sections. Reconnect pipes with temporary fittings. Vent isolated equipment.
   2. Flush pipe with clean water until pipe section to be tested is clean and free of dirt, sand, pipe shavings, or other foreign material.
   3. Plug pipe outlets with test plugs, blind flanges or other devices suitable for the test pressure. Brace securely to prevent blowouts. Verify test pressure does not exceed any component of the pipe system.
   4. Restrain or remove expansion joints.
   5. Pressurizing equipment shall include a pressure regulator, set to avoid over-pressurizing and damaging otherwise acceptable pipe.

D. Hydrostatic Pressure Testing
   1. Contractor shall use a hydrostatic test pump specifically designed for performing hydrostatic pressure tests on pipe.
   2. Clean potable water shall be used as the testing medium to fill the pipes.
   3. Pipe shall be tested at 1.5 times the rated working pressure of the pipe or the lowest rated pressure of any component of the system being tested. In no case exceed maximum allowable pressure for any pipeline component, including valves, fittings, and instruments.
4. Apply test pressure slowly, and once the test pressure has been reached, allow the pressure to stabilize, without adding additional pressure. This may take 2 to 3 hours.

5. Once pressure has stabilized, add additional water to achieve the test pressure and begin the test.

6. After 1 hour, additional water shall be added to return to the test pressure. If the volume of water required to achieve the test pressure after 1 hour is less than shown in the table, then the pipe has passed the pressure test.

7. The total test time, including the initial pressurization, initial expansion and time at test pressure, shall not exceed eight hours. If the test is not completed within that time, the test pressure shall be removed for at least eight hours, prior to performing the test again.

8. If pressure test is not accepted, correct leaks or defects in the pipe and retest.

9. Remove temporary sectionalizing devices after tests are complete.

E. Test Report

1. Pressure testing shall be documented using the test log provided as Attachment 1 to this Specification.

2. CQA Consultant shall record the following information for each test.
   a. Date of test.
   b. Description and identification of piping system tested.
   c. Type of test performed.
   d. Test fluid.
   e. Test pressure.
   f. Results of test.
   g. Type and location of leaks detected.
   h. Corrective action taken to repair leaks.
   i. Results of retesting.
   j. Name of person performing test.

[END OF SECTION 15210]
**ATTACHMENT 1 TO SECTION 15210**  
**HYDROSTATIC PIPE PRESSURE TEST LOG**

**SANBORN HEAD**  
*Building Trust. Engineering Success.*

<table>
<thead>
<tr>
<th>Project No.:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name:</td>
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<tr>
<td>Project Location:</td>
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**Weather**

<table>
<thead>
<tr>
<th>Contractor:</th>
<th>Test No.</th>
</tr>
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<tbody>
<tr>
<td>Sanborn Head Personnel:</td>
<td>Person/Company Performing the Test:</td>
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<table>
<thead>
<tr>
<th>Date of Test:</th>
<th>Time of Test:</th>
<th>Start:</th>
<th>Finish:</th>
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</thead>
<tbody>
<tr>
<td>Rated Working Pressure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location/designation of pipe tested:</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>t</th>
<th>Time (hours)</th>
<th>P&lt;sub&gt;t&lt;/sub&gt; Pressure Gauge Reading (psig)</th>
<th>P&lt;sub&gt;c&lt;/sub&gt; Pressure Drop (%)</th>
<th>Amount of Make-Up Water Added (gal.)</th>
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<tbody>
<tr>
<td>0</td>
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<td></td>
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<td>6</td>
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Pass Fail Retest? Yes No

Description/location of defects for failed test:

Test Procedure:
1. Pressurize to 150 percent of rated pressure;
2. Add make-up water each hour for three hours to maintain pressure;
3. Test phase begins after the initial three-hour phase;
4. After one, two or three hours add a measured amount of makeup water to return to the test pressure; and
5. The amount of makeup water added to return to the test pressure must not exceed the amount in the makeup water test values table on the back of this sheet.

Comments:

Signature:
## Maximum Allowable Make-Up Water Volume

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<thead>
<tr>
<th>Nominal Pipe Size (inches)</th>
<th>Make-Up Water Allowance (U.S. Gallons per 100 ft. of Pipe)</th>
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<tr>
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<td>1-1/2</td>
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SECTION 15212

POLYVINYL CHLORIDE (PVC) PIPE, VALVES, AND FITTINGS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. CONTRACTOR shall provide all labor, materials, tools, and equipment, and perform all operations necessary to furnish and install the polyvinyl chloride (PVC) pipe and fittings as specified herein and as shown on the Drawings or as required by ENGINEER or OWNER.

1.2 SUBMITTALS

A. CONTRACTOR shall submit manufacturer’s technical product data that meets the requirements of this Section, and the installation instructions for PVC pipe and fittings, to ENGINNER prior to delivery of PVC pipe to the site.

1.3 MATERIALS STORAGE AND HANDLING

A. CONTRACTOR shall be responsible for the handling, storage, and care of the PVC pipe from the time of delivery to the site until final acceptance of the completed Work by OWNER. CONTRACTOR shall be liable for all damages to the materials during such time.

PART 2 – PRODUCTS

2.1 PIPE AND FITTINGS

A. Pipe and fittings shall be manufactured from a PVC compound that meets the requirements of Cell Classification 12454-B polyvinyl chloride as outlined in ASTM D1784. Pipe and fittings materials shall be specially formulated with sufficient ultraviolet screeners to provide for longer term outdoor exposure with no deleterious effects.

B. PVC pipe used in the construction of leachate conveyance and control systems shall meet the requirements of ASTM D1784 and ASTM D1785.

C. PVC fittings used in the construction of leachate collection and control systems shall meet the requirements of ASTM D2464 and ASTM D2467.

D. All PVC cements shall meet the requirements of ASTM D2564.

E. Clean rework or recycle material generated by the manufacturer’s own production may be used so long as the pipe or fittings produced meet all the requirements of this Section.
F. Fittings shall be industrial, heavy duty, hub style.

G. Socket fittings shall be pressure rated the same as the corresponding size pipe prescribed by ASTM D1785. Threaded fittings shall be pressure rated to at least 150 percent of the rating for socket fittings.

2.3 VALVES

A. Valves shall be flanged Type 21/21A PVC ball valves, manufactured by Asahi/America, or approved equal, of the size indicated on the Drawings.

B. Valves shall be constructed with the following materials:
   1. Body – polyvinylchloride (PVC)
   2. Seats – polytetrafluoroethylene (PTFE), backed with fluorocarbon rubber (FKM)
   3. Seals - FKM

PART 3 – EXECUTION

3.1 PVC PIPE HANDLING

A. PVC pipe and pipe fittings shall be handled carefully in loading and unloading. They shall be lifted by hoists and lowered on skidways in such a manner as to avoid shock. Pipe and pipe fittings shall not be dropped or dumped.

3.2 PVC PIPE INSTALLATION

A. PVC pipe installation shall conform to the requirements of this Section, the manufacturer's recommendations, and as outlined in ASTM D2774V.

3.3 JOINING OF PVC PIPES

A. Pipes shall be joined in accordance with ASTM D2855.

B. All pipe shall be inspected for cuts, scratches, or other damages prior to installation. Pipe with imperfections shall not be used.

C. All burrs, chips, etc., shall be removed from pipe interior and exterior.

D. All loose dirt and moisture shall be wiped from the interior and exterior of the pipe end and the interior of the fitting.

E. All pipe cuts shall be square and perpendicular to the center line of pipe.

F. Pipe ends shall be beveled prior to applying primer and solvent cement so that the cement does not get wiped off during insertion into the fitting socket.
G. A coating of CPS primer, as recommended by pipe supplier, shall be applied to the entire interior surface of the fitting socket, and to an equivalent area on the exterior of the pipe prior to applying solvent cement.

H. The solvent cement shall comply with the requirements of ASTM D2564 and shall be applied in strict accordance with manufacturer's specifications.

I. Pipe shall not be primed or solvent welded when it is raining, or when atmospheric temperature is below 40°F, or above 90°F when under direct exposure to the sun.

J. After solvent welding, the pipe shall remain undisturbed until cement has reached initial set. As a guideline for joint setting time, use 1 hour for ambient temperatures between 60°F and 100°F, or 2 hours when ambient temperature is between 40°F and 60°F.

K. Pipe and pipe fittings shall be selected so that there will be as small a deviation as possible at the joints, and so that inverts present a smooth surface. Pipe and fittings that do not fit together to form a tight fitting shall be rejected.

[END OF SECTION 15212]
SECTION 15310

SUMP RISER BUILDING PIPE, FITTINGS, AND APPURTENANCES

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. Furnish and install all pipe, valves, and appurtenances in the Sump Riser Building, including:
   1. Polyvinyl chloride (PVC) pipe and fittings.
   2. Check valves, regulating valves, shutoff valves, air release/vacuum relief valves.
   3. Labels.

B. Furnish and install blind flanges to sideslope risers.

C. Furnish and install vent piping.

D. Perform hydrostatic testing.

1.2 PRODUCT HANDLING

A. Ship, store, and install material and equipment in a manner which does not degrade quality, serviceability or appearance. Store in clean, dry location.

B. Do not spill or cause release of any chemicals used to clean or bond piping materials.

1.3 SUBMITTALS

A. Manufacturers product data, including catalog cuts, specifications, dimensions.

1.4 WORKMANSHIP

A. All pipe shall be installed by qualified workmen, with minimum 5 years’ experience in industrial process plumbing.

PART 2 – PRODUCTS

2.1 PVC VALVES

A. PVC for pressure applications shall be Schedule 30, ASTM D1785, Type 1, Grade 1. Fittings shall be socket type, ASTM D2467.

B. Solvent cements shall conform to ASTM D2564.
C. Pipe and fitting sizes shall be as indicated on the Drawings.

D. PVC valve bodies and fittings shall be Schedule 80, ASTM D1785, Type I, Grade 1. Fittings shall be socket ends, ASTM D2467.

E. All flange hardware shall be stainless steel. Flange gaskets shall be ¼-inch Viton, full face.

2.2 VALVES

A. Ball valves shall be true union design with socketed connections. Pressure rating shall be 150 psig, Type I, Grade I PVC construction with Viton or PVDF seats and seals. Full port opening. Asahi-America or approved equal.

B. Butterfly valves shall be wafer or flange type, constructed of stainless steel or PVC. Valves shall have Viton seats and Viton packing. CONTRACTOR shall provide inserts, as required, to allow for full opening of the valve. Pressure rating shall be 150 psig at 75°F.

C. Flanged check valves shall be ANSI Class 150, swing-check style, with PVC body, bonnet, and counterweight. Fasteners shall be Type 18-8, 304, or 316 stainless steel. Seals shall be FKM. Check valves shall include an external stainless steel spring assist. Asahi-America or approved equal.

D. Wafer-style check valves shall be ANSI Class 150, wafer style, with PVC body, valve plates, and trim. Seals shall be Viton or Teflon. Check valves shall provide leak-tight seal at 2 psi back pressure. Techno Corporation or approved equal.

E. PVC Gate valves shall be flanged or socketed. Stainless steel gate valves shall be threaded. Rated for 150 psig to full vacuum. Seals shall be Viton or PVDF. Asahi-America or approved equal.

F. Sample ports shall be nominal ½-inch diameter stainless steel ball valves with threaded connection to PVC leachate pipe. Seats and seals shall be PTFE. The free end of the valve shall be supplied with a ⅜-inch inner dimension hose barb fitting.

2.3 VACUUM, AIR, AND PRESSURE VALVES

A. All valves shall be dual air release/vacuum release valves. Air release and vacuum relief valve shall be Crispin Model US20SB with an orifice diameter of 0.25 inches designed for domestic sewer use for inflow/outflow of up to 98 scfm.

B. Air release and vacuum relief valves shall allow entry of air when operating pressure is below atmospheric pressure. The valve shall also allow release of air from the pipe when the pipe is filling and under pressure. The valve shall close
leak-tight when the pipe is full, and provide a drip-tight seal at 2 psig and above. Provide suitable seat material to assure drip-tight seal.

C. Valve body shall be constructed of cast iron. Float rod, float guide, and float shall be stainless steel. Furnish valve body with factory applied epoxy lining.

D. Valve shall be equipped with 2-inch diameter NPT inlet and 2-inch diameter NPT outlet.

E. Valve body pressure rating shall be 150 psig.

2.4 FLEXIBLE HOSE

A. Furnish flexible hose for leachate discharge manifold connections where indicated on the Drawings. Hose shall be constructed of ultra high molecular weight polyethylene tube, with fabric/wire reinforcement, and abrasion resistant outer cover. Inner surface of hose shall be smooth. Hose shall be designed for minimum operating pressure of 200 psig. Goodyear Rubber Products Corporation or approved equal.

B. Furnish sufficient length of hose to allow connection to rigid piping without placing strain on any components.

2.5 QUICK CONNECT COUPLINGS, CLAMPS

A. Standard couplings shall be quick-disconnect type. Couplings shall be constructed entirely of stainless steel and use a cam mechanism to secure the adapter to the coupler, providing a leak-tight connection. No springs, ball bearings, or snaps shall be used. Engagement levers shall be stainless steel. Gaskets shall be Viton. Couplings shall be designed to operate at working pressure of 200 psig. Hose clamps shall be non-reusable stainless steel, "Band-It" type. OPW "Kamloks" or approved equal.

B. Dry-style couplings shall be dry disconnect style. Couplings shall be constructed entirely of stainless steel. Couplings shall use a locking cam and groove mechanism to secure the adapter to the coupler and lever actuation to prevent flow of liquid until the coupling is secured. Coupling shall provide automatic closure from both directions. Ring seal shall be Viton. Couplings shall be designed to operate at working pressure of 200 psig. Hose clamps shall be non-reusable stainless steel, "Band-It" type. OPW "Kamvalok" or approved equal.

C. Size as indicated on the Drawings.

2.6 PIPE SUPPORTS

A. Pipe supports shall conform to requirements of Chapter 1, Section 6 of the ANSI Code for Pressure Piping (B-31.1).
B. All concrete and masonry anchors shall be drilled expansion bolt type; power driven fasteners will not be allowed. Expansion bolts shall be stainless steel. Rawl-Bolt, Hilti or approved equal.

C. Pipe supports shall be fabricated from stainless steel. Supports shall generally conform to the typical details shown on the Drawings. The dimensions shall be modified as required to accommodate specific conditions.

2.7 LABELS

A. Labels shall be as indicated in Attachment A to this Section.

2.8 SIDESLOPE RISER BULKHEAD AND HARDWARE

A. Fabricate sideslope riser bulkhead from HDPE, 1-inch-thick flatstock.

B. For sideslope riser pipe connection, provide Type 304 stainless steel flanges, nipple, and hardware, size as indicated on the Drawings.

C. Provide Type 18-8, 304, or 316 stainless steel, self-tapping threaded inserts with ¼-inch-20 internal threads and minimum depth of ⅜-inch.

D. Provide bulkhead bolts and flat washers of matching material to threaded inserts. Bolts shall have sufficient length to span bulkhead flatstock, bulkhead gasket, and flat washer while still engaging at least ⅜-inches into threaded insert.

E. Fabricate Bulkhead Gasket from ¼-inch thick Viton sheet gasket material, 40 durometer hardness.

PART 3 – EXECUTION

3.1 GENERAL

A. Do not damage pipe, valves, gauges or other equipment during loading, hauling or handling. Provide all lifting and loading equipment required.

B. Furnish all tools and materials required to join pipes in accordance with manufacturer's instructions.

C. Install all piping and appurtenances in a neat and workmanlike manner. Pipe shall be aligned true to line and grade and rigidly supported. Pipe shall be installed at constant slope, and in alignment with fittings, equipment and structures.
D. Install adequate unions and flanges to allow convenient removal of valves, meters, and other equipment from the pipe system.

E. Pipe and fittings shall be cleaned before being installed to remove foreign material.

F. Screwed connections shall be made with thread compound applied to male thread only. Teflon tape or compound may be used for PVC, steel, or copper.

G. Proper fittings shall be used for changes in direction. Pipe shall be installed at right angles or parallel to walls and floors. Provide low points and union connections where needed to allow drainage.

H. All penetrations through structures shall be sealed weather-tight.

I. Check layout of pipe prior to final installation, and verify adequate clearance between valves, fittings, instruments, and structural components can be achieved.

3.2 VALVES

A. Locate and orient valves and flow meters to allow unobstructed manual operation, and access for maintenance.

B. Verify correct orientation of check valves and butterfly valves with flow direction.

3.3 FLEXIBLE HOSES

A. Flexible hoses shall have female couplings at both ends of hose. Male adapters shall be installed on pipe system.

B. Lay hose neatly in vault between end connections. Install in a manner to prevent kinking, or straining of connections.

C. Secure quick disconnect fittings to flexible hose using clamps specified above. Follow manufacturer’s installation instructions.

3.4 PIPE SUPPORTS

A. Pipe supports shall be independent of equipment to which pipe is connected. Equipment shall be removable without affecting pipe supports.

B. At a minimum, pipe supports shall be spaced to conform to requirements of Chapter 1, Section 6 of the ANSI Code for Pressure Piping (B-31.1).
C. Install pipe supports for rigid pipe within 4 inches of connections with flexible hose. Install pipe supports within 4 inches both sides of all valves and flow meters. Pipe supports shall be located so that access in the Sump Riser Building, and removal of equipment from the sideslope risers is not restricted.

D. Install pipe supports at maximum 4-foot intervals along straight runs of pipe.

E. Piping shall be supported and restrained to prevent excessive stress on pipe, fittings, or equipment to which piping is connected. Supports shall provide required pitch for proper drainage. Supports shall prevent excessive variation in supporting force. Supports shall allow free expansion and contraction.

3.5 SIDESLOPE RISER BULKHEAD

A. Install sideslope riser bulkhead to sideslope riser pipe. Cut pipe square to long axis of pipe after pipe temperature has reached equilibrium after burial. Prevent cuttings from entering the sideslope riser.

B. Neatly shave or grind cut pipe end to within 1/8-inch of true planar surface. Maintain square edges.

C. Field drill holes for lag screws in pipe wall and in bulkhead. Holes shall be square to pipe end.

D. Install gasket and bulkhead. Evenly tighten lag screws until gasket forms an airtight seal.

E. Install hardware on and through bulkhead face as indicated with airtight penetrations.

3.6 TESTING

A. General
   1. Pipe lines shall be pressure tested in presence of the CQA Consultant. CONTRACTOR to provide ENGINEER with a minimum 7-day notice before performing test.
   2. Provide necessary pipe connections between section of pipe being tested and nearest available source of water or air supply, together with test pressure equipment, meters, pressure gauge, and other equipment, materials, and facilities necessary to perform test.
   3. OWNER will provide water for testing.
   4. Provide bulkheads, flanges, valves, bracing, blocking, or other temporary sectionalizing devices required.

B. Test all PVC pipe and fittings, and flexible hose inside the Sump Riser Building.
C. Preparation
   1. Remove any valves, flow meters, and instruments from within the test sections. Reconnect pipes with temporary fittings. Flush pipe with clean water until pipe section to be tested is clean and free of dirt, sand, pipe shavings, Teflon tape, or other foreign material.
   2. Plug pipe outlets with test plugs, blind flanges or other devices suitable for the test pressure. Brace securely to prevent blowouts. Verify test pressures do not exceed any component of the pipe system. Complete system test. Reinstall valves, flow meters and instruments.
   3. Restrain all expansion joints.
   4. Pressurizing equipment shall include a pressure regulator set to avoid over-pressurizing and damaging otherwise acceptable line.

D. Test Report
   1. CONTRACTOR shall prepare and submit a test report for each pipe system tested to ENGINEER. Include following information in test report.
      a. Date of test.
      b. Description and identification of piping system tested.
      c. Type of test performed.
      d. Test fluid.
      e. Test pressure, final pressure.
      f. Results of test.
      g. Type and location of leaks detected.
      h. Corrective action taken to repair leaks.
      i. Results of retesting.
      j. Name of person performing test.

E. Visual Testing of Valves, Flow Meters, and Instruments
   1. During initial startup of the sump riser building equipment, valves, flow meters, and instruments removed from the pipe during pressure testing shall be visually inspected for leaks from the item itself and from its connection points with adjacent pipe.

[END OF SECTION 15310]
CONTENTS

DIVISION 16 – ELECTRICAL

Section 16000 – Electrical Work
Section 16500 – Instrumentation and Controls
SECTION 16000

ELECTRICAL WORK

PART 1 – GENERAL

1.1 SCOPE

A. This Specification defines the finished, tested Work, in full operating condition and complete with all materials, labor, and accessories, necessary for a complete installation. This Specification and the Drawings do not show every fitting, raceway, box, and device, but CONTRACTOR shall furnish without additional recompense, all materials necessary to complete the electrical system in accordance with the best practices of the trade to the complete satisfaction of ENGINEER and OWNER.

B. The Drawings indicate a typical electrical arrangement for the Sump Riser Building. Refer to the Drawings for locations.

C. CONTRACTOR, in addition to providing lighting and power equipment installation and wiring, shall provide signal wiring and connections between the Sump Riser Building and other locations as required for monitoring and interlocks, and all raceways and sleeves as required.

1.2 CODES, REGULATIONS AND STANDARD

A. Where referred to, published standard specifications of technical societies, trade associations and governmental agencies codes and requirements of Underwriters' Laboratories and other Protective organizations; Federal, State and Municipal regulations and codes; and publications of a similar nature shall be the edition enforced at the Site by the authorities having jurisdiction. The applicable requirements of the publications of the following organizations shall apply to the Work under this Section as if fully written herein.

1. Institute of Electrical and Electronic Engineers (IEEE).
5. Underwriters' Laboratories, Inc. (UL).
6. Local and State Building codes, and all other authorities having jurisdiction.
9. Occupational Safety and Health Administration (OSHA).
10. Association of Edison Illuminating Companies (AEIC).
B. CONTRACTOR shall use the current edition of the above codes, regulations and standards enforced at the Site by local authorities having jurisdiction.

1.3 PERMITS AND FEES

A. CONTRACTOR shall obtain all necessary permits, licenses or certificates of approval. CONTRACTOR shall pay all fees required by, and conform to, all local, state and federal laws and regulations governing the Work. At the conclusion of the Work, CONTRACTOR shall furnish ENGINEER with certificates of inspection from all authorities having jurisdiction.

1.4 TEMPORARY LIGHT AND POWER

A. Temporary light and power shall be installed and maintained under this Contract for use by all trades for the duration of construction, complete with all wiring, switches, protective devices and similar equipment as may be required.

1.5 GUARANTEE

A. CONTRACTOR shall and does hereby warrant and guarantee that all work executed under these Specifications will be free from defects of materials and workmanship for a period of one (1) year from the date of Certificate of Substantial Completion.

B. CONTRACTOR shall further warrant that all materials furnished and work executed are in accordance with all applicable laws, regulations, and Codes.

C. CONTRACTOR shall submit to OWNER, all applicable equipment warranty registrations complete with the date and place of purchase.

1.6 SYMBOLS

A. Symbols on Drawings show approximate location of fixtures, outlet boxes and other equipment. Unless otherwise detailed, the exact location shall be governed by structural conditions, obstructions, architectural and equipment drawings. This is not to be construed to permit redesigning systems. All outlets shall be interconnected as shown on the Drawings. Locate and install all boxes and equipment where they will be readily accessible.

1.7 WORKMANSHIP

A. All Work shall be executed in a workmanlike manner by experienced electricians licensed by the State of New Hampshire, in accordance with the most modern engineering practice and shall present a neat appearance when completed. The Work shall be carefully laid out in advance, and where cutting, channeling, chasing or drilling of floors, walls, partitions, ceilings or other
surfaces are necessary for proper installation, support or anchorage of cables or other electrical work, the work shall be carefully done, and any damage to the building, piping or equipment shall be repaired by skilled mechanics of the trade involved at no additional cost to OWNER.

B. After installation, all electrical equipment shall be protected to prevent damage during the construction period. Openings in boxes and cabinets shall be left clean, exposed surfaces shall be cleaned and plated surfaces polished.

PART 2 – PRODUCTS

NOTICE - All products installed in the Sump Riser Building and below grade structures shall be rated for use in a Class I, Division 1, Group D location and installed in accordance with manufacturer recommendations. Explosive concentrations of methane are likely to be found in these areas.

2.1 RACEWAYS

A. Interior raceways and raceways exposed to the weather shall be threaded galvanized rigid steel conduit. Underground raceways shall be Schedule 80 PVC. Minimum raceway size shall be ¾-inch.

B. At motor connections within Sump Riser Building and final instrument connections, conduit shall be UL listed flexible coupling. Construction shall be bronze braid over brass corrugated core with nonmetallic internal liner, no more than 3 feet in length. Minimum size for flexible couplings shall be ½-inch.

C. All raceways entering the Sump Riser Building shall be provided with conduit seals approved for Class I, Division 1, Group D location in accordance with Article 501 of the National Electrical Code.

2.2 WIRES AND CORDS

A. Conductors installed in raceways shall be stranded copper THHN/THWN or XHHW conductors, rated 600 volts. Branch circuit conductors shall not be smaller than #12 AWG. Low voltage control conductors and cables shall be as specified in Division 16500.

B. Cord, as indicated on the Drawings, shall be heavy duty type SO cord for use in a Class I, Division 1, Group D environment.

C. Each wire end entering a cabinet shall be color coded, by insulation color or applied color tape, to denote polarity. Phases shall be color coded for identification throughout the project as follows:

- 120 / 240 VAC single-phase
- 208 VAC 3-phase (VFD Output)
Phase A  Black  Black
Phase B  Red  Red
Phase C  Blue
Neutral  White  White
Ground  Green  Green

D. All feeders in pull boxes, cabinets, and branch circuits in outlet and pull boxes having more than one circuit, shall have a fiber tag attached, designating the name and/or number of the circuit.

E. Conductors shall be carefully handled during installation so as to avoid mechanical injury to the conductor, insulation or covering.

2.3 OUTLET BOXES

A. Each outlet in the wiring or raceway systems shall be provided with an outlet box to suit the conditions encountered, as indicated on the Drawings. Boxes installed where they are exposed to the weather or in hazardous areas shall be of the cast metal type with threaded hubs listed for the application.

2.4 EXTERIOR PULL BOXES

A. Provide polymer concrete or other non-metallic pull boxes per NEC Article 370 as required for power and signal wiring, at a maximum spacing of 200 feet. Power and signal wiring systems shall have separate pull boxes. Covers shall have permanent, recessed label indicating “Electric.”

2.5 WIRE CONNECTIONS AND CONNECTION DEVICES

A. Wire connections for wire sizes #12 through #8 shall be made with pressure-type twist on connectors with an internal spring. Connections for wire sizes #6 through 1000 MCM shall be made with compression connectors.

B. Where wire connections are made, insulation shall be carefully stripped from conductors in accordance with the connector manufacturer’s recommendations. The conductor(s) shall be inserted in the connector and the joint shall be made-up tight to secure the connection and not damage the conductor(s) or insulation.

2.6 DISCONNECT SWITCHES

A. Disconnect switches shall be heavy duty type, motor rated, quick make and quick break with the indicated number of poles, and rated for the circuit voltage and amperage with NEMA 3R enclosure. All disconnect switches shall be lockout/tagout capable.

2.7 PANELBOARD
A. Panelboards shall be as specified on the Drawings.

2.8 GROUNDING

A. All new equipment, devices, systems and structures, whether shown or detailed on the Drawings, shall be grounded in accordance with Article 250 of the National Electrical Code.
B. All electrical equipment and motors shall be grounded by an equipment grounding conductor installed with the power conductors.
C. New Electric Service shall be grounded and bonded in accordance with the National Electrical Code and Utility requirements.

2.9 WIRING DEVICES

A. Wiring devices shall be as indicated on the Drawings.

2.10 ELECTRIC HEATER

A. Heater and thermostat shall be as indicated on the Drawings.

2.11 LIGHTING FIXTURES

A. Lighting fixtures shall be as indicated on the Drawings complete with lamps indicated.

PART 3 - EXECUTION

3.1 COORDINATION

A. The drawings are diagrammatic and indicate the general arrangement of systems, equipment and the extent of the work and may not necessarily be to scale. CONTRACTOR shall make reasonable adjustments in fixture and equipment locations to suit field conditions at no additional cost to OWNER.

B. CONTRACTOR shall connect to and/or provide all electric power, outlets, devices, fixtures, pull boxes and control wiring for all equipment shown on the Drawings. All electrical wiring shall be in accordance with the manufacturer’s requirements.

C. CONTRACTOR shall fully coordinate the Work. CONTRACTOR shall furnish any and all information, in writing, that is needed for the coordination of clearances, etc., with the work of others, and such information shall be given in a timely fashion, so as not to impede the progress of other trades. CONTRACTOR shall confer and resolve all conflicts immediately. If so directed CONTRACTOR shall prepare composite drawings to resolve any space or clearance conflict. If CONTRACTOR installs materials and equipment before
providing needed coordination, CONTRACTOR shall relocate his work or make other adjustments, as needed, at no additional cost to OWNER.

D. CONTRACTOR shall arrange to have its recessed equipment set in place ahead of construction and shall assure, sufficiently in advance, the shape, size and position of all openings required. In case of failure on the part of CONTRACTOR to install recessed equipment as designed, CONTRACTOR shall cut and patch as needed, with no additional cost to OWNER.

E. Coordinate electrical work with OWNER.

3.2 RACEWAYS

A. Raceways shall be installed neatly racked, routed parallel or perpendicular to building lines, and securely attached and supported in accordance with NECA “Standards of Installation.” Threaded GRS conduit must be wrench-tight to fittings for proper grounding.

B. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

C. Group related conduits shall be supported using conduit rack. Construct rack using galvanized steel channel assemblies or unistrut and single-bolt strap. Provide space on each rack for 25 percent additional conduits.

D. Provide pull boxes as required or where excessive turns are encountered. At exterior locations, install pull boxes flush with grade, on a structural base.

E. Use lubricants to facilitate wire pulling. Lubricant shall be UL listed for use with the type of wire being installed.

F. Furnish and install pull wires in all spare conduits. Label each terminus.

3.3 WIRES AND CABLES

A. Provide all wiring as indicated and/or required to each piece of equipment, wiring device, lighting fixture, etc. shown on the Drawings.

B. All splices, taps, connections, terminations, etc., shall be made with appropriate connectors in a workmanlike manner and in accordance with the NEC.

C. Provide suitable split-wedge cable supporting devices in each conduit riser, as required to support vertical cables.
3.4 OUTLET AND JUNCTION BOXES

A. Outlet and junction boxes shall be installed in a workmanlike manner, rigidly supported and properly aligned. Do not rough-in boxes back-to-back.

3.5 MOUNTING HEIGHTS

A. Wiring devices and other equipment shall, unless noted otherwise, be mounted with respect to the indicated surface as follows:

- Receptacles: 4 feet – 0 inches above finish grade
- Switches: 4 feet – 6 inches above finish grade
- Control Panel: 6 feet – 6 inches to top above finish grade

3.6 IDENTIFICATION AND NAMEPLATES

A. Provide \textbf{typed} directories for panel board branch circuit identification.

3.7 TESTING

A. Test all systems, and repair or replace defective work.

[END OF SECTION 16000]
SECTION 16500

INSTRUMENTATION AND CONTROLS

PART 1 – GENERAL

1.1 SCOPE

A. Work under this Section includes all metering and control equipment to be furnished as part of the control system, and all signal wiring.

B. The interior of the Sump Riser Buildings is classified as a Class I, Division 1, Group D environment. All instrument wiring and controls shall be intrinsically safe or rendered intrinsically safe through the use of barrier devices, or shall be rated explosion proof and installed in a manner that maintains the rating.

1.2 SUBMITTALS

A. Submit manufacturer’s catalog information showing type and size of equipment. All variances from the requirements of the contract documents shall be submitted for ENGINEER’s approval prior to delivery of the equipment to the Site.

1.3 QUALITY CONTROL

A. All Work performed shall comply and be in accordance with all approved trade practices and manufacturer’s recommendations.

PART 2 – PRODUCTS

NOTICE: All products installed in the Sump Riser Building and below grade structures shall be rated for use in a Class I, Division 1, Group D atmosphere and installed in accordance with manufacturer recommendations. Explosive concentrations of methane are likely to be found in these areas.

2.1 GENERAL

A. All equipment used for similar applications shall be the product of a single manufacturer.

2.2 PRESSURE GAUGES

A. Pressure gauges shall be 2.5-inch diameter, glycerin filled stainless steel case, satin finish.

B. Window shall be polycarbonate or laminated glass. Dial shall be white with black markings. Accuracy shall be ±1 percent of full scale.
C. Gauge shall be bottom outlet, flush mounted style, with 1/4-inch NPT stainless steel connection. Pressure range shall be 0 to 100 pounds per square inch gauge (psig).

D. Provide each pressure gauge with a plug type, isolation valve as indicated on the Drawings to allow removal of the gauge under operating pressure.

2.3 LEVEL SWITCH AND HOLDER

A. The level switch shall be float type, with reed switch.

B. Level switch shall indicate discrete fluid level by buoyancy of the float, which closes the reed switch. Switch shall be installed in normally open position.

C. Each level switch assembly shall include a single reed switch and single float. Switch location shall be as indicated on the Drawings.

D. Float diameter shall be 2 inches. Float shall be buoyant in liquids of specific gravity greater than 0.70.

E. Float and guide tube shall be 316 stainless steel.

F. Extension pipe and fittings shall be stainless steel. Dimensions shall be as indicated on the Drawings.

G. Float switch installed inside the Sump Riser Building shall be intrinsically safe. Circuit shall be rendered intrinsically safe by Zener Barrier in the control panel.

H. Support bracket shall be galvanized steel or stainless steel.

I. Acceptable Manufacturer – Madison M5600-PR or approved equal.

2.4 FLOW METERS

A. Flow meters shall be as specified on the Drawings.

B. Acceptable manufacturers – Sparling Instruments, Inc., or approved equal.

2.5 LEVEL TRANSMITTERS

A. Level transmitters for leachate sump and leachate structures shall be submersible piezoresistive pressure sensing type, with Type 316 stainless steel construction, welded stainless steel diaphragm, 24VDC excitation, 2-wire 4-20mA output, and integral sealed signal cable with vent tube.
B. Install aneroid bellows assembly for atmospheric pressure reference in the junction box on the leachate sump side riser pipes, unless otherwise noted. Use manufacturer-supplied vented cable full length to bellows.

C. Level transmitters shall be intrinsically safe. Circuit shall be rendered intrinsically safe by Zener Barrier in the control panel.


E. Schedule:

<table>
<thead>
<tr>
<th>Location</th>
<th>Range</th>
<th>Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase III Primary Leachate Sump</td>
<td>0-100 inches water</td>
<td>125 feet</td>
</tr>
<tr>
<td>Phase III Secondary Leachate Sump</td>
<td>0-100 inches water</td>
<td>125 feet</td>
</tr>
</tbody>
</table>

2.6 PUMP-DOWN SWITCHES

A. The secondary leachate pump-down switches shall be tethered, wide-angle float type.

B. Pump-down switches shall be normally open contacts with an activation range between 7 and 9 inches as installed in the secondary leachate sumps.

C. Pump-down switches shall be sized to operate without binding or harring when installed in the secondary leachate sumps with the provided secondary leachate pumps.

D. The switch element shall consist of a SPDT, snap-acting mechanical contact. Switch element activation shall not be sensitive to rotation of the float or turbulence in the sump.

E. Mercury-based switch elements shall not be acceptable.

F. The float body shall be PVC or other suitable material, and the cable shall be flexible 16-gauge, 3-conductor SJOW cable.

G. Float switch installed inside the leachate vault shall be intrinsically safe. Circuit shall be rendered intrinsically safe by Zener Barrier in the control panel.

H. The pump-down switch shall be supplied with mounting hardware adequate to provide a stable, consistent operating range for the switch.

I. Acceptable Manufacturer – SJE-Rhombus Milliampmaster or approved equal.
2.7  SIGNAL WIRING

A. Wiring from the control panel to sensors at the Sump Riser Building shall be single- or multi-pair, #20 AWG stranded copper wire, twisted, 100 percent aluminum foil individually shielded pairs, with outer jacket. Acceptable Manufacturer: Belden No. 8761 (1-pair), No. 9402 (2-pair), No. 9874 (6-pair).

B. Wiring from control panel to control panel shall be multi-pair, #18 AWG stranded copper wire, 100 percent aluminum foil individually shielded pairs, with outer jacket. Acceptable Manufacturer: Belden No. 9774 (6-pair), Belden No. 9776 (12-pair).

2.8  NETWORK WIRING

A. Network configuration and cabling will be performed by the SCADA system supplier.

2.9  SCADA Controls

A. The Contractor shall coordinate closely with the Engineer and the City to ensure a complete installation meeting the requirements listed below. The SCADA system shall:

a. be consistent with the existing system used at the site and be integrated into the existing telemetry system with a programmable logic controller (PLC) and human-machine interface (HMI);

b. be capable of communication using Modbus protocol;

c. integrate into the existing telemetry system with fiber optic cable (or alternative), specifically the HMI located in the Main Office; and

d. integrate with the existing auto-dialer alarm system or provide equivalent alternative.

B. SCADA control panel shall be provided with a protective outer door and shall be configured to provide access to all routinely used panel components.

PART 3 – EXECUTION

3.1  GENERAL

A. Install components to allow access for maintenance. Care shall be taken in the installation to ensure sufficient space is provided between instruments and other equipment for ease of removal and servicing.

3.2  FLOW METERS, PUMP-DOWN SWITCHES, AND LEVEL SWITCHES
A. All instrumentation shall be installed in accordance with the manufacturers' installation requirements.

B. Flush chips and other debris from piping before installing flow meter.

C. Install flow meters to allow minimum 5 pipe diameters in straight pipe upstream and 2 pipe diameters downstream from any valves or fittings. Verify that this requirement has been met prior to installation of the flow meter.

D. Installation hardware shall include all details including special brackets and mounting hardware that may be necessary to properly install the instruments. Brackets and mounting hardware shall be stainless steel.

E. All mechanical fasteners such as bolts, nuts, screws, cinch anchors, clamps, etc. shall be stainless steel, unless otherwise specified.

F. Install level switches, in accordance with distances indicated on the Drawings. Switches shall be installed in a manner that does not interfere with unobstructed vertical movement of the float. Switches shall be installed in normally open position, rising of the float shall cause switch closure.

G. Install pump-down switches in secondary leachate sumps in accordance with the operating range specified on the Drawings. Switch mounting hardware shall be installed to provide a stable, consistent operating range.

3.3 SIGNAL WIRING

A. All signal wiring shall be installed by a qualified electrician or technician, with minimum 5 years of experience in controls wiring.

B. Make all wiring connections between the control panels and field instrumentation. Install signal wiring conduit to right hand bottom of control panels, power wiring to left hand bottom.

C. Install Class 1, Division 2 sealing glands at conduit penetrations through building walls.

D. Install signal wiring from terminal to terminal with no intermediate splicing. Tie signal wire ground to panel ground at control panel end only. Tie signal wire ground for Pump Inhibit signal between panels to CP-1 only.

E. Loosely coil, securely cap and tape ends of unused signal wire pairs.

[END OF SECTION 16500]