TOWN OF AMHERST
MASSACHUSETTS

CONTRACT NUMBER: 16001400
VENDOR NUMBER: 2806

CONTRACT FOR DESIGNER SERVICES - Jones Library

THIS AGREEMENT, executed this 17th day of January 2016 by and between: Finegold Alexander Architects and the Town of Amherst

hereinafter called "Designer" and the Town of Amherst, a municipal corporation in the County of Hampshire, Commonwealth of Massachusetts, hereinafter called "The Town".

WITNESSETH, that for the consideration hereinafter mentioned, the Town and the Designer shall agree to the terms and conditions contained in this contract, enumerated as follows:

THE TOWN shall pay the Designer for the performance of this contract in the sum of:

Not to exceed $50,000 dollars in accordance with the terms of this contract.

This contract shall not be altered in any particular without the consent of all parties to this contract. All alterations to this contract must be in writing and authorized as such by the Town Manager and all parties signing this contract. If the Designer is a Corporation the certification authorizing the person signing for the Designer must be attached to this contract or such signature is void.

Final payment on this contract shall release and discharge the Town of Amherst from any and all claims against the Town on account of any work performed hereunder, or any alteration hereto.

This contract shall so be governed by Chapter 7 as amended, and Chapter 149 as amended, of the General Laws of the Commonwealth of Massachusetts.

This contract shall be deemed to be a Massachusetts contract and it's interpretation and construction shall be governed by the laws of Massachusetts and the Town of Amherst By-Laws.

The Town of Amherst is not bound by this contract until approved by the Town Manager.
| ARTICLE 1: DEFINITION OF TERMS       | 3  |
| ARTICLE 2: CONSULTANTS, SUBCONTRACTING, SUCCESSORS AND ASSIGNMENTS | 3  |
| ARTICLE 3: SURVEYS, BORINGS, TESTS, LABORATORIES, PHOTOGRAPHS     | 4  |
| ARTICLE 4: TIME AND RECORDS AND LAWS                                 | 5  |
| ARTICLE 5: PROFESSIONAL RESPONSIBILITY AND SERVICES TO BE PERFORMED | 6  |
| ARTICLE 6: PROJECT SUPPORT PERSONNEL                                | 9  |
| ARTICLE 7: RECORD DRAWINGS, REPORTS, CALCULATIONS                   | 9  |
| ARTICLE 8: DESIGNER'S BASIC FEE                                     | 10 |
| ARTICLE 9: EXTRA COMPENSATION                                       | 10 |
| ARTICLE 10: REIMBURSEMENT                                           | 12 |
| ARTICLE 11: DESIGN FEES AND RESPONSIBILITY FOR MODIFICATIONS AND CHANGE ORDERS | 12 |
| ARTICLE 12: METHOD OF PAYMENT TO THE DESIGNER                       | 13 |
| ARTICLE 13: TERMINATION, NO AWARD                                   | 13 |
| ARTICLE 14: RELEASE AND DISCHARGE                                   | 13 |
| ARTICLE 15: NOTICES, APPROVALS, INVOICES                            | 14 |
| ARTICLE 16: INSURANCE                                               | 14 |
| ARTICLE 17: LEGAL REQUIREMENTS                                      | 15 |
| ARTICLE 18: DESIGNER'S CONTRACT SUPPLEMENTARY DATA                  | 17 |
ARTICLE 1: DEFINITION OF TERMS

1. GENERAL LAWS - the General laws of the Commonwealth as amended including any rules, regulations and administrative procedures implementing said laws.

2. OFFICE - Shall mean the Office, Department, Board or Commission that is responsible for the successful completion of this project. The Office for this project is Town of Amherst.

3. DIRECTOR - Shall mean the head of the Office, Department, Board or Commission that is responsible for the successful completion of this project. The Director for this project is Town Manager or his/her successor.

4. PROJECT - the project which may involve one or several construction contracts which is numbered and entitled, and the location of which is described on Page One.

5. DESIGNER - the person or firm performing professional services under this agreement.

6. PRINCIPALS - the registered Architects or Engineers listed in ARTICLE 18.

7. APPROVAL OF THE DIRECTOR - a written communication from the Town of Amherst to the Designer expressing the approval of services or plans prepared by the Designer which in no way relieves the Designer from responsibilities, the review notwithstanding.

8. NOTICE TO PROCEED - a written communication by the Town, customarily a letter, which constitutes an essential condition of this contract, authorizing the Designer to perform the services for the project phase to which such Notice shall relate. The Notice to Proceed shall include the basis for compensation, the fixed limit construction cost, and may include the time for submittal. Subsequent written communications amending the Notice to proceed are required to change either a submittal date or the fixed limit construction cost.

9. SUBMITTAL DATES - those dates referred to in the Notice to Proceed or any subsequent amendment thereto.

10. FIXED LIMIT CONSTRUCTION COST - the maximum cost of construction established by the Town as set forth in the Notice to Proceed, and any amendments thereto.

11. CONSTRUCTION CONTRACT - contract for construction of a whole or part of the project including all change orders.

12. TOTAL CONSTRUCTION COST - the sum of (1) the actual construction contract award price, and (2) each authorized change order which revises the construction contract award price.

ARTICLE 2: CONSULTANTS, SUBCONTRACTING, SUCCESSORS AND ASSIGNMENTS

1. The Designer shall not employ consultants, sublet, assign or transfer any part of his services or obligations under this agreement without the prior approval of and written
consent of the Town. The Town shall not unreasonably withhold such approval. The written consent shall not in any way relieve the Designer from his responsibility for the professional and technical accuracy and the coordination of all data, designs, drawings, specifications, estimates and other work or materials furnished.

2. Except as otherwise provided in this contract or authorized by the Town, the Designer shall employ within the basic fee for this project the following consultants where their specific services are required: Structural Engineer, Electrical Engineer, Mechanical Engineer, Civil Engineer, Sanitary Engineer, Architect, Landscape Architects, Cost Estimators. Consultants must be registered in their respective disciplines if registration is required under the applicable General Laws.

3. When the Designer receives payment from the Town, the Designer shall promptly make payment to each consultant whose work was included in the work for which such payment was received from the Town. The Town shall have the contractual right to investigate any breach of a consultant contract and to initiate or condone corrective measures necessary for the best interest of the Town.

ARTICLE 3: SURVEYS, BORINGS, TESTS, LABORATORIES, PHOTOGRAPHS

1. The OFFICE shall furnish to the Designer available surveys of the project's building site, or sites, showing the grades and lines of streets, pavements and adjoining properties; the rights, restriction, easements, boundaries and contours of the site, or sites; reports from any borings, test pits, chemical, mechanical or other tests, any photographs and information as to water, sewer, electricity, steam, gas, telephone and other services.

2. The OFFICE does not guarantee the accuracy of information furnished, and the Designer must satisfy himself as to the correctness of data, except in instances where written exception to the contrary is specifically indicated by the Director. If the above data is not available or is in the opinion of the Designer insufficient, the Designer, upon request, will be given authorization to obtain the services of a consultant or perform the work with his own employees. In no case shall the Designer commence such work without prior written authorization of the Director.

3. During the construction phase of this contract, the Designer shall retain the services of a photographer, a qualified testing laboratory, and special field inspectors, when required by the project, subject to the prior approval of the Director.

4. If a consultant's services estimated to cost more than $25,000 are required, including the services of a qualified testing laboratory functioning under the jurisdiction of both a Massachusetts registered engineer and licensed inspectors, a detailed description of the proposed services shall be prepared by the Designer.
and approved by the OFFICE. Consultant fee proposals shall be received by the Designer and accompanied with recommendations of approval submitted to the Director before any work is authorized. Such Consultants shall carry adequate Liability Insurance. When a consultant's services are estimated to cost $25,000 or less, the Designer shall use established standard rates for such services.

5. Drawings and/or specifications needed to obtain survey or subsoil information, and any other soils engineering shall be prepared by the Designer within the basic fee. The Designer shall then analyze and evaluate such surveys and tests and make his design conform to the results of such evaluation.

6. The OFFICE will reimburse the Designer as provided in Article 10, for the cost of consultant services performed under this Article. For responsibility, coordination, inspection, analysis and evaluation of consultant's services retained under this Article, the Designer shall be compensated as provided in Article 10.

ARTICLE 4: TIME AND RECORDS AND LAWS

The Designer shall cause to be maintained complete, accurate and detailed records of all time devoted to the project by the Designer and each consultant or subcontractor employed by the Designer. The Commonwealth may at all reasonable times audit such records. On contracts where the total design fee exceeds $10,000 or which are for the design of a building for which the budgeted or estimated construction cost exceeds $100,000, the Designer shall comply with General Laws Chapter 30, Section 38R, which requires the Designer to:

   a. maintain accurate and detailed accounts for a six-year period after the final payment (b) (1)

   b. file regular statements of management concerning internal auditing controls (c)

   c. file an annual audited financial statement (d)

   d. submit a statement from an independent certified public accountant that such CPA has examined management's internal auditing controls and expresses an opinion as to their consistency with management's statements in (b) above and whether such statements are reasonable with respect to transactions and assets that are substantial in relation to designer's financial statements (c) (4) (1) - (2).

The Designer shall perform the work required under this contract in conformity with requirements and standards of the OFFICE and all applicable laws of the Commonwealth of Massachusetts, its political subdivisions and the Federal Government. The Designer, including all approved consultants and subcontractors, shall comply with all applicable provisions of the rules and regulations of the President's
Committee on Equal Employment Opportunity and Procedures promulgated by the Governor of Massachusetts or his designees insuring Equal Opportunity.

ARTICLE 6: PROFESSIONAL RESPONSIBILITY AND SERVICES TO BE PERFORMED

1. The Designer shall be responsible for the professional and technical accuracy and the coordination of all designs, drawings, specifications, estimates and other work furnished by him or his consultants and subcontractors. The Designer shall staff his office with sufficient personnel to complete the services required under this contract in a prompt and continuous manner, and shall meet the approval schedule and submittal dates established during the course of this contract.

2. The Designer shall furnish appropriate competent professional services for each of the phases to the point where detail checking or reviewing by the OFFICE will not be necessary. Any changes, corrections, additions or deletions made by the OFFICE shall be incorporated into the Design of the Project unless detailed objections there to are received from the Designer and approved by the OFFICE. Because of the fixed limit construction cost called for in this agreement, the Designer with the written approval of the Director in performing services hereunder, shall be permitted to determine materials, equipment, component systems and types of construction to be included in the design of the Project. The decision of the Director shall be final in matters pertaining to this paragraph.

3. The Designer shall thoroughly acquaint his employees and consultants with the provisions of General Laws Chapter 30, Section 30M, which provides in part: "for each item of material the specifications shall provide for either a minimum of three named brands of material or description of material which can be met by a minimum of three manufacturers or producers, and for the equal of any one of said named or described materials." Refer to the law and the OFFICE for procedure regarding proprietary items.

4. Neither the OFFICE review, approval or acceptance of, nor payment for, any of the services furnished shall be construed to operate as a waiver of any rights under the contract or any cause of action arising out of the performance of the contract.

5. STUDIES, PROGRAMS, MASTER PLANS, REPORTS

Upon receipt of a Notice to Proceed from the Director acceptable to the Designer, the Designer shall meet as necessary with agents of the OFFICE and shall prepare and submit programs, preliminary reports, master plans, studies, sketches, space utilization criteria and estimates in accordance with the Scope of Services attached to, and hereby made a part of, this contract. Monthly progress reports shall be submitted by the Designer to the OFFICE. The Designer shall prepare and submit concept sketches of various design ideas to determine a
workable plan solution in terms of the programs, funds available, and as complete an overall design concept as possible including cost estimates. The Designer shall furnish to the Director eight (8) copies of the report for final approval on or before the date set forth in the Notice to Proceed or any supplement thereto.

6. DESIGN AND CONSTRUCTION

PHASE 1. - SCHEMATICS

In accordance with the Scope of Services attached to, and hereby made a part of this contract and upon receipt of a Notice to Proceed from the Director acceptable to the Designer, the Designer shall meet as necessary with agents of the OFFICE and shall prepare and submit to the Director single line schematic drawings including floor plans, elevations and space criteria to establish basic design ideas and respective cost estimates. The Designer shall submit to the Director for approval six (6) copies of said schematic plans, outline specifications and cost estimates, on or before the date or time for submission specified in the Notice to Proceed or any supplement thereto, unless the Designer shall have obtained from the Director an extension of time in writing.

Estimated construction cost and fee as set forth in the original Notice to Proceed will not be changed by the OFFICE without the agreement of the Designer.

PHASE 2. - DESIGN DEVELOPMENT

Upon receipt of a Notice to Proceed the Designer shall prepare from the approved Phase 1 documents complete preliminary plans and outline specifications in accordance with the Scope of Services mentioned in Phase 1 and a cost estimate, to enable the OFFICE to study and understand the progress and development of the Project. Such plans, outline specifications and cost estimate shall be subject to the written approval of the Director. The Designer shall submit to the Director for approval six (6) copies of said preliminary plans, specifications and cost estimates, on or before the date or time for submission specified in the Notice to Proceed or any supplement thereto, unless the Designer shall have obtained from the Director written extension of time.

PHASE 3. - CONSTRUCTION DOCUMENTS

Upon receipt of a Notice to Proceed from the Director for Phase 3 of the project, the Designer shall meet as necessary with agents of the OFFICE and in accordance with the Scope of Services mentioned in Phase 1 shall prepare and submit to the Director on or before the date of time specified in the Notice to Proceed or any other supplement thereto, complete working plans and specifications in sufficient detail to permit firm bids in open competition for
construction of the project, and a detailed cost estimate. Said plans and specifications shall be based on the design development, outline specifications and construction cost estimate approved in Phase 2 of the Project, the Notice to Proceed with Phase 3, or any subsequent modification thereto. The detailed estimate of the cost of the Project shall include quantities of all materials and unit prices of labor and materials as well as a cost estimate for each item of work. Such working plans and specifications and cost estimates shall be subject to the written approval of the Director. The Designer shall furnish to the Director for approval six (6) sets of the said plans, specifications and construction cost estimates. From the approved working plans and specifications, with changes incorporated as so endorsed, the Designer shall prepare and transmit to the Director a set of reproducible plans on cloth or mylar, (4 mil.) and original specifications on high quality white bond paper properly packaged, suitable for blueprinting, (other suitable methods are subject to the prior approval of the Director), which shall become the property of the Town.

One (1) set of prints, blue or blackline, and specifications shall be submitted with the reproducibles. The OFFICE will prepare the contract documents, including advertisements, for receipt of proposals from construction contractors, and execution of a construction contract or contracts unless such preparation is part of the Scope of Services mentioned in Phase 1. If requested by the OFFICE the Designer shall prepare all addenda. The Designer shall conduct a qualification review of the low bidder and shall transmit its recommendation as to the award of the construction contract to the OFFICE.

If within six months after approval of Construction Documents in final form the bids of the lowest responsible and eligible bidders exceed the fixed limit construction cost, the Designer shall, if so instructed in writing by the Director, provide such revised working plans and specifications, and construction cost estimates as the Director shall require for the purpose of bringing the cost within the fixed limit construction cost; provided the Designer may in connection with such revision make reasonable adjustments in the scope of the Project subject to the written approval of the Director which approval shall not be unreasonably withheld. The Designer shall not be paid additional compensation for such services.

PHASE 4 - DESIGNERS' SERVICES DURING CONSTRUCTION

Upon the award of the construction contract the Designer and his consultants shall, for the purpose of protecting the Town against defects and deficiencies in the work of the Project: (1) be charged with general administration of the construction contract; (2) furnish the General Contractor with information for establishing lines and grades and such large scale drawings and full sized detailed drawings as the Director may require; (3) promptly check and approve samples, schedules, shop drawings and other submissions by the General Contractor; (4) visit the site or sites of the Project bi-weekly (utilizing conference calls on alternating weeks) and more often if reasonably required by the Director.
to inspect the progress and quality of construction of the Project; (5) conduct semi-final and final inspections of the construction project and report the results of such inspections in writing to the OFFICE; (6) require each consultant employed in accordance with Article 2 above to make visits weekly, and more often if requested by the Director, for the same purposes during the progress of that portion of the said construction to which the consultant’s services relate and to report in writing thereon to the Designer; (7) report to the OFFICE weekly in writing on the progress of construction including whether or not the contractor is keeping record drawings; (8) recommend condemnation of all project work observed by the Designer which fails to conform to the Contract Documents; (9) decide all questions regarding interpretation of or compliance with the Contract Documents, except as the Director may in writing otherwise determine; (10) review and act on all requests for change in plans, specifications, or contracts for the Project; (11) upon written instructions from the Director, furnish working plans and specifications for any such change; and (12) assist the OFFICE in any change order appeal hearing requested under General Laws, Chapter 30, Section 39Q, except as provided in Article 9.1 (7).

The Designer shall be familiar with "M.G.L. Ch. 30, S. 39K" which sets forth the procedure for payment to Contractors and shall submit to the OFFICE all requisitions for payment submitted by the General Contractor. With respect to each such requisition, he or she shall certify to the best of the Designer's knowledge that the percentage of work included in the requisition is accurate and the work performed conforms with the contract documents. In the event the Designer does not approve the requisition exactly as submitted by the General Contractor, said Designer shall forward it for payment to the OFFICE dated but unsigned with an accompanying letter of explanation setting forth objections and recommended changes. Timely payment of Contractors is required by General Laws, Chapter 30, Section 39K; therefore the Designer shall establish office procedures assuring either immediate mail or messenger delivery of the requisition for payment to the OFFICE, and shall process requisition for payment within forty-eight hours of receipt.

ARTICLE 6: PROJECT SUPPORT PERSONNEL

The Designer will hire and pay a clerk of the works for this Project acceptable to the Director. The Clerk will work full-time on the Project and cooperate fully with the Director.

ARTICLE 7: RECORD DRAWINGS, REPORTS, CALCULATIONS

1. Before examining the requisition for final payment submitted to the OFFICE by the General Contractor and making any certification in response thereto, the Designer shall obtain from the General Contractor record drawings showing the actual installation of the plumbing, heating, ventilating and electrical work under the Construction Contract and all variations, if any. The Designer shall ascertain
by his review that changes authorized by Change Orders are shown on the Contractor's record drawings and on the applicable original reproducibles and shall submit the OFFICE the complete set as revised, which reproducibles shall become the property of the Town.

2. At the conclusion of the construction contract the Designer shall submit to the Director a confidential evaluation report relating to the overall performance of the General Contractor and his subcontractors, in the form prescribed by the OFFICE.

3. Two suitably bound legible copies of all original design and quantity calculations including those pertinent to change orders and shop drawings if applicable shall be furnished by the Designer to the OFFICE at the conclusion of the construction contract and prior to the expiration of the construction period.

**ARTICLE 8: DESIGNER'S BASIC FEE**

For the performance of all services required in this contract and excluding those services specified under Articles 9, 10 and 11, the Designer shall be compensated by the OFFICE in accordance with the lump sum fee as designated in the Notice to Proceed and determined in accordance with: (a) a negotiated lump sum fee or (b) a lump sum fee established by the Town prior to the designer selection process.

If there is a material change in the scope of services provided in this contract, the Designer and the OFFICE will mutually agree to an adjustment in the Designer's Basic Fee. Delay of one year or more by the Town plus a significant change in the estimated construction cost of the project will be considered a change in scope of services.

Payment of the design fee shall be made in accordance with Article 12.

1. **Designer's Basic Fee** – Not to exceed $50,000.00

2. **Special Conditions** -

**ARTICLE 9: EXTRA COMPENSATION**

1. With the formal written approval of the Director, the Designer shall perform all or any of the following services in addition to the services performed pursuant to Article 5 above: (1) making measured drawings of existing construction facilities when required for planning additions, or alterations thereto, (2) revising previously approved drawings, specification or other documents to accomplish changes authorized by the Director, (3) preparing documents for alternate bids requested by the Director except alternates prepared by the Designer to adjust the fixed limit construction cost, (4) providing consultation concerning
replacement of any work damaged by fire or other cause during construction and furnishing professional services of the type set forth in Article 5 as may be required in connection with the replacement of such work, (5) providing professional services made necessary by the default of the contractor in the performance of the construction contract, (6) providing services after final payment to the contractor, (7) assisting the OFFICE in change order appeal hearings under General Laws, Chapter 30, section 38Q, by preparing special documents or appearing as a witness, (8) for preparing change orders and supporting data, except as set forth in Article 11, (9) revising working plans and specifications submitted in their final and complete form for which bids were not received within six months after submission, (10) making studies other than those normally required and preparing applications and reports to assist the OFFICE in obtaining federal aid, (11) preparing operating and maintenance manuals, (12) observing the balancing of air and water circulation systems and reporting the results thereof, (13) observing and setting and adjusting automatic controls and reporting the results thereof, (14) assisting the Town in litigation arising out of the construction contract, (15) performing services for interior design, and (16) performing any other professional services not otherwise required under this contract.

2. For services provided pursuant to Paragraph 1 of this Article the Designer will be compensated by the Town at the rates listed below.

3. Upon submission by the Designer of satisfactory evidence that additional expenses are being incurred beyond the amount realized on a fee basis, the Director may authorize extra compensation on the basis of actual cost plus overhead, but not profit and without a 2 1/2 times markup for additional services rendered under Phase 4, after the original scheduled construction completion time as extended by authorized additional work change orders has been exceeded by more than twenty-five percent (25%) through no fault of the Designer. This shall only be applicable when the Designer shall have submitted under Article 5 Phase 3 a detailed analysis or description of how the Designer arrived at the estimated number of calendar days for completion of construction.

4. The Designer and his consultants shall not be compensated for any services involved in preparing changes that are required for additional work that should have been anticipated by the Designer in the preparation of the bid documents,
as reasonably determined by the Director.

ARTICLE 10: REIMBURSEMENT

The Designer shall be reimbursed by the Town:

(1) The actual cost to the Designer of consultants hired to obtain any data in accordance with Article 3 above, provided, however that no reimbursement for such expense shall be made unless the rates of compensation for said consultant services shall have been approved in writing by the Director. The Director may approve a lump sum fee.

(2) The actual cost to the Designer of special consultants not specified in Article 2 and approved in writing by the Director, provided, however, that no reimbursement for such expense shall be made unless the rates of compensation for said consultant services shall have been approved in writing by the Director. The Director may approve a lump sum fee.

(3) Any other specially authorized reimbursement, including special printing.

(4) For document copies in excess of numbers specified in the contract if requested by the OFFICE.

The OFFICE shall not reimburse the Designer for travel expenses under this contract, provided, however, that in special circumstances and with the prior approval of the Director, the Designer may be reimbursed for out-of-state travel expenses consistent with the Rules and Regulations promulgated under Section 38, Chapter 7 of the General Laws.

The OFFICE shall not reimburse the Designer for any telephone or other out-of-pocket expenses unless specifically authorized under this Article.

For coordination and responsibility of services authorized under (1) and (2) the Designer shall be reimbursed the actual expense plus 10% where the estimated cost of the specific service is estimated not-to-exceed $50,000.00. The aforementioned percentage will be negotiated to a lesser factor in those instances when the not-to-exceed cost is projected to exceed $50,000.00.

The exemption number assigned to the OFFICE as an exempt purchaser under the Sales Act, C14 of the Acts of 1966 to the extent that materials and supplies are used or incorporated in the performance of this contract for the Town of Amherst is 048-001-406.

ARTICLE 11: DESIGN FEES AND RESPONSIBILITY FOR MODIFICATIONS AND CHANGE ORDERS

The Designer shall be compensated in accordance with the rates specified in Article 9,
for the service of its employees or any Consultant listed in Article 2 for the preparation of modifications, change orders and supporting data. The Designer or his consultants shall not be compensated for any services involved in preparing changes that are required for additional work that should have been anticipated by the Designer in the preparation of the bid documents, as reasonably determined by the Director. The Designer shall not be compensated for any services involved in preparing changes required to make unit price adjustments due to existing conditions. Changes for which the Designer receives no compensation under this Article shall be called "no fee modifications" or "no fee change orders." The fact that the Designer receives no fee shall not limit the Town's legal remedies regarding such changes.

Payments for modifications or change orders to the Designer shall be made upon completion of the contractor's work under such modifications or change orders.

**ARTICLE 12: METHOD OF PAYMENT TO THE DESIGNER**

The Designer will be compensated by the Town for Article 5 services according to a payment schedule attached to and hereby made a part of this contract.

**ARTICLE 13: TERMINATION, NO AWARD**

1. By written notice to the Designer, the Director may terminate this contract at any time. If any such termination shall occur without the fault of the Designer, all compensation and reimbursement due to the Designer up to the date of termination, in accordance with all contract terms, including proportionate payment for uncompleted portions of the work, shall be paid to the Designer by the Town. Such payment shall not exceed the fair value of the work, as the Director shall determine.

2. By written notice to the Director, the Designer may terminate this contract (1) if the Town, within sixty (60) days following written notice to the Director from the Designer of any default by the Town under the contract, shall have failed to remove such default or (2) if, after the Designer shall have performed all services required of the Designer in Phase 1, Phase 2, or Phase 3 of the Project, at least six (6) months shall have elapsed without receipt by the Designer of Notice to Proceed with the next phase of the project. Upon any such termination by the Designer all compensation and reimbursement payable to the Designer in accordance with the contract up to and including the date of termination shall be paid to the Designer by the Town.

3. If after receipt of the bids on the Construction Contract or approval of the final Plans and Specifications by the OFFICE, the Construction Contract is not awarded by the OFFICE, the Designer shall be paid seventy-five percent (75%) of the basic fee consistent with the provisions of Article 12.

**ARTICLE 14: RELEASE AND DISCHARGE**
The acceptance by the Designer of the last payment for services paid under the provisions of Article 12 or under Article 13 in the event of termination of the contract, shall in each instance, operate as and be a release to the Town, the OFFICE, and every member and agent thereof, from all claim and liability to the Designer for everything done or furnished for or relating to the work, or for any act or neglect of the OFFICE of any person relating to or affecting the work, except for those written claims submitted by the Designer to the OFFICE with the last payment requisition.

ARTICLE 15: NOTICES, APPROVALS, INVOICES

Any notice required under this contract to be given by the Town to the Designer, or by the Designer to the Town, shall be deemed to have been so given, whether or not received, if mailed by prepaid postage by, respectively, the Director or the Designer.

Written approval by the Director for Article 9 Extra Compensation and Article 10 Reimbursement shall be in the form of a letter.

All invoices except for those made under the provisions of Article 11 may be submitted monthly and subject to contract terms and proper documentation will be promptly processed by the OFFICE or returned to the Designer. No invoice, however, shall be required to be submitted or processed when the net amount due is less than $100.00. All invoices from the Designer shall be submitted to the OFFICE.

Invoices submitted for services which have not been previously authorized in writing shall be returned to the Designer.

Invoices for services under Article 9, 10, and 11 shall be accompanied by a complete breakdown listing the name, payroll title, date, number of hours each day, hourly rate and extended amount.

Request for previously authorized expenses of any nature must be accompanied by a billing/receipt from the source of the expense.

Supporting back-up data shall be submitted in triplicate.

ARTICLE 16: INSURANCE

1. The Designer shall at his own expense obtain and maintain a Professional Liability Policy for errors, omissions or negligent acts arising out of the performance of this agreement in a minimum amount equal to ten percent (10%) of the Fixed Limit Construction Cost and in any event shall not be less than $50,000.00. Insurance coverage in excess of one million dollars ($1,000,000.00) shall not be required with exceptions to be negotiated or expressed in the original public notice to Designers. Subject to the prior approval of the OFFICE, the Designer may have a Professional Liability Policy with a deductible clause if in
the judgment of the OFFICE, the Designer's financial resources are sufficient to directly absorb the possible Liability expenses without surety assistance.

2. The coverage shall be in force from the time of the agreement to the date when all construction work designed under the contract is completed and accepted by the OFFICE. Since this insurance is normally written on a year-to-year basis, the Designer shall notify the OFFICE should coverage become unavailable.

3. The Designer shall, before commencing performance of this contract, provide by insurance for the payment of compensation and the furnishing of other benefits in accordance with General Laws, as amended, to all employed under the contract and shall continue such insurance in full force and effect during the term of the contract.

4. The Designer shall carry insurance in a sufficient amount to assure the restoration of any plans, drawings, computations, field notes or other similar data relating to the work covered by this contract in event of loss or destruction until the final fee payment is made or all data is turned over to the OFFICE.

5. Certificates and any and all renewals substantiating that required insurance coverage is in effect shall be filed with the contract. Any cancellation of insurance whether by the insurers or by the insured shall not be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the OFFICE at least fifteen days prior to the intended effective date thereof, which date should be expressed in said notice. The Designer shall indemnify, defend and save harmless the Town, the OFFICE and all of its or their officers, agents, and employees against all suits, claims of liability of every name and nature, for or on account of any injuries to persons or damage to property arising out of the negligence of the Designer in the performance of the work covered by this agreement and/or failure to comply with the terms and conditions of this agreement, whether by himself or his employees or subcontractors, but only in respect of such injuries or damages sustained during the performance and prior to the completion and acceptance of the work covered by this agreement.

6. Upon request of the Designer, the Director reserves the authority to modify any conditions of this Article.

7. Designers providing services only under Part 5 of Article 5 shall be exempt from the provisions of this Article unless the request for proposals provides to the contrary.

ARTICLE 17: LEGAL REQUIREMENTS

1. NONRESIDENT PROCESSING; SIGNATURES
Every Designer who is a nonresident of the Commonwealth of Massachusetts, or a nonresident co-partner of a Designer hereby appoints the Secretary of the Commonwealth of Massachusetts and his successor in office to be his true and lawful attorney in and for Massachusetts, upon whom all lawful processes in any action or proceeding arising out of this contract may be served. When legal process against any such person is served upon the Secretary of State, a copy of such process shall forthwith be sent by registered mail with a return receipt requested by the Office or its lawful Attorney to said Designer or nonresident co-partner at the address set forth in the contract. Said Designer or said nonresident co-partner hereby stipulates and agrees that any lawful process against it which is served on said attorney shall of the same legal force and validity as if served on said Designer or on said co-partner. Such authority shall continue in force so long as any liability remains outstanding against said Designer or said co-partner.

2. ACCESS TO CONTRACTOR'S RECORDS (EXECUTIVE ORDER #195)

The Governor or his designee, the Secretary of Administration and Finance, and the State Auditor or his designee shall have the right at reasonable times and upon reasonable notice to examine the books, records and other compilations of data of the contractor which pertain to the performance and requirements of this contract.

3. TRUTH-IN-Negotiations CERTIFICATE (GENERAL LAWS CHAPTER 7, SECTION 301)

If the designer's or construction manager's fee is negotiated, the designer or construction manager must file a truth-in-negotiations certificate prior to being awarded the contract by the deputy commissioner, which must be incorporated into the contract. The certificate must contain:

a. a statement that the wage rates and other costs used to support the designer’s compensation are accurate, complete, and current at the time of contracting; and

b. an agreement that the original contract price and any additions to the contract may be adjusted within one year of completion of the contract to exclude any significant amounts if the Director determines that the fee was increased by such amounts due to inaccurate, incomplete or noncurrent wage rates or other costs.

ARTICLE 18: DESIGNER'S CONTRACT SUPPLEMENTARY DATA

No changes are to be made in either Paragraphs 1, 2, or 3 of this Article at any time
during the life of this contract without prior written notification to the Director and when required, receipt of written approval by the Director.

1. The Designer certifies under the penalties of perjury that the following names (Individual) (Partners) (Directors of Corporation) are registered by the Commonwealth as architects or professional engineers pursuant to the provisions of General Laws, Chapter 112 and further that the (Individual) and that the majority of the (Partners) (Directors of the Corporation) and all the Joint Ventures are so registered by the Commonwealth.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Mass. Registration No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maurice N Finegold</td>
<td>President</td>
<td>1776</td>
</tr>
<tr>
<td>James G Alexander</td>
<td>Treasurer</td>
<td>5465</td>
</tr>
<tr>
<td>Tony Hsiao</td>
<td>Director</td>
<td>6993</td>
</tr>
<tr>
<td>Jeffrey Garriga</td>
<td>Clerk</td>
<td>10357</td>
</tr>
<tr>
<td>Regan Shields Ives</td>
<td>Sr Assoc</td>
<td>20500</td>
</tr>
<tr>
<td>Rebecca Berry</td>
<td>Sr Assoc</td>
<td>20393</td>
</tr>
</tbody>
</table>

2. The Designer certifies under the penalties of perjury that the following names (Individual) (Partners) (Officers of Corporation) are the officers of the firm contracted for the above designated Amherst Project:

IF A CORPORATION: (Name Officers and Titles)

Maurice N Finegold, President
James G Alexander, Treasurer
Jeffrey J. Garriga, Clerk
Tony Hsiao, Director
Regan Shields Ives, Senior Associate
Rebecca Berry, Senior Associate
IF A PARTNERSHIP: (Names of all Partners)

IF AN INDIVIDUAL: (Name of Owner)

MASSACHUSETTS REGISTERED PRINCIPAL OF FIRM RESPONSIBLE FOR THIS PROJECT IS

James G. Alexander

____________________________________ (Notify OFFICE of any changes.)

3. In accordance with Chapter 7, Section 301 (e), I further certify that the Designer or Construction Manager has not given offered or agreed to give any person, corporation, or other entity any gift, contribution or offer of employment as an inducement for, or in connection with, the award of the contract for design services; no consultant to or subcontractor for the Designer or Construction Manager has given, offered or agreed to give any gift, contribution or offer of employment to the Designer or Construction Manager, or to any other person, corporation, or entity as an inducement for, or in connection with, the award to the consultant or subcontractor of a contract by the Designer or Construction Manager; and no person, corporation or other entity, other than a bona fide full-time employee of the Designer or Construction Manager, has been retained or hired by the Designer or Construction Manager to solicit for or in any way assist the Designer or Construction Manager in obtaining the contract for design services upon an agreement or understanding that such person, corporation or other entity be paid a fee or other consideration contingent upon the award of the contract to the Designer.
Signed under the penalties of perjury this 20th day of January, 2016.

Designer: Finegold Alexander Architects Inc

By:

SIGNATURES

IN WITNESS WHEREOF the Town caused these presents to be signed in triplicate (3) and approved by the Town Manager and the said Designer has caused these presents to be signed in triplicate(3) and its official seal to be hereto affixed by its officer or agent thereunto duly authorized (by the attached corporate resolution). This instrument shall take effect as a sealed instrument.

DESIGNER: Finegold Alexander Architects Inc

BY: [Signature] (SEAL)

James G. Alexander

Approved as to appropriation:

[Signature]

Town Accountant

Line Item: 214015 - 500000

In proper form and properly executed:

[Signature]

Town Counsel

Approved:

[Signature]

Town Manager
CERTIFICATE OF TAX COMPLIANCE

No contract or other agreement for the purposes of providing goods, services or real estate space to any of the foregoing agencies shall be entered into, renewed or extended with any person unless such person certifies in writing, under penalties of perjury, that he had complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

04-2467113
Social Security or Federal I.D. number

Signature: Individual or Corporate Officer

January 20, 2016
Date

PLEASE PRINT

Corporate Name: Finegold Alexander Architects Inc

Address: 77 No. Washington Street, Boston, MA 02114

City, State, Zip Code: Boston, MA 02114
CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person, business, partnership, corporation, union committee, club or other organization, entity or group of individuals.

Signature of individual submitting bid or proposal

Finegold Alexander Architects Inc
Name of Business
CERTIFICATE OF AUTHORITY

At a duly authorized meeting of the Board of Directors of the

Finegold Alexander Architects Inc held on January 20, 2016
(Name of Corporation) (Date)

At which all the Directors were present or waived notice, it was voted that,

James O'G Alexander
(Name)

Treasurer
(Officer)

of this company, be appointed and is hereby authorized to execute contracts and bonds in the name and behalf of said company, and affix its Corporate Seal thereto, and such execution of any contract or obligation in this company's name on its behalf by said officer, under seal of the company, shall be valid and binding upon this company.

A TRUE COPY,

ATTEST:

Place of Business: Finegold Alexander Architects Inc

DATE OF THIS CONTRACT: January 17, 2016

I hereby certify that I am the Clerk of the Finegold Alexander Architects Inc

that James Alexander is the duly elected Treasurer

of said company, and the above vote has not been amended or rescinded and remains in full force and effect as of the date of this contract.

(Clerk) (Corporate Seal)
FOREIGN CORPORATION CERTIFICATION

AFFIDAVIT OF COMPLIANCE
Form AF-4A 1/78

EXECUTIVE OFFICE FOR
ADMINISTRATION AND FINANCE
The Commonwealth of Massachusetts

X MASSACHUSETTS BUSINESS CORPORATION

___ NON-PROFIT CORPORATION

___ FOREIGN (non-Massachusetts) Corporation

I, Jeffrey J. Garrile, President X Clerk of
Finegold Alexander Architects whose principal office is
(Name of Corporation)
located at 77 No. Washington Street, Boston, MA 02114 (Address)
do hereby certify that the above named Corporation has filed with the State Secretary all certificates and annual reports required by Chapter 156B, Section 109 (Business Corporation), by Chapter 181, Section 4 (Foreign Corporation), or by Chapter 180, Section 26A (non-profit Corporation) of the Massachusetts General Laws.

SIGNED UNDER THE PENALTIES OF PERJURY THIS 20th day of
January 2016.

(Signature of responsible Corporate Officer)
CONTRACT NUMBER
16002408

TOWN OF AMHERST
TOWN HALL
4 BOLTWOOD AVENUE
AMHERST, MASSACHUSETTS 01002
413 259-3026

CONTRACT FOR: Hazardous Materials Inspection Services

CONTRACT DURATION: Through August 1, 2016

CONTRACT AMOUNT: Two Thousand, Eight Hundred and Fifty Dollars.

VENDOR NAME & ADDRESS: ATC Group Services LLC
73 William Franks Drive
West Springfield, MA. 01089

TELEPHONE: 413-781-0070

The Vendor hereby acknowledges acceptance of the terms and conditions contained in this CONTRACT and in the following named attachments:

Reference: ATC Proposal No. 081.2016.0095

VENDOR: [Signature] DATE: 6/7/16

NAME: Brian Williams TITLE: Branch Manager

(Please type or print) CORPORATE SEAL

46-0299408 (Social Security or Federal Identification Number)

DEPARTMENT HEAD DATE: 6-21-16

COMPOLLER DATE: 6/22/16

FINANCIAL MANAGER DATE: 6/22/16

VENDOR NUMBER: 27350 (2)

DATE:

BUDGET LINE(S)

<table>
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<tr>
<th>Code</th>
<th>Description</th>
<th>Amount</th>
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</tr>
<tr>
<td>91400</td>
<td>500001</td>
<td>214.58</td>
</tr>
</tbody>
</table>
This CONTRACT between the Town of Amherst, a Municipal Corporation in the County of Hampshire and
in the State of Massachusetts, acting through its Office of Purchase and its Purchasing Agent and Vendor.

Witness that the consideration hereinafter mentioned, the Vendor hereby agrees to furnish and deliver, at such
places and at such times as shall be designated by the Town, in accordance with the proposal and specifications as
outlined on the attached proposal or document executed by said Vendor.

This CONTRACT shall be enforced for the period stated by said Town or as stated in the proposal which is
incorporated herein by reference.

This CONTRACT shall not be altered in any particular without the consent of all parties to this CONTRACT
endorsed hereon unless the Town Manager shall otherwise order, and all alterations must be in writing. All
payments for any work done under any such alteration shall be made at the time of the final payment on this
contract, unless otherwise authorized by the Town Manager, which authorization shall be specified in the
modification to the CONTRACT.

This CONTRACT is not effective until signed by the Town Manager of said Town.

The Town hereby agrees with the Vendor to pay for said commodities/service at the times and in the manner
specified in said proposal.

This Contract shall be deemed to be a Massachusetts contract and its interpretation and construction shall be
governed by the laws of Massachusetts and the Charter and Bylaws of the Town of Amherst.

The Said Vendor expressly warrants that said commodities/service, at the time of delivery, shall be free from
all defects.

The Said Vendor also agrees to pay all Federal or State sales taxes (if any) that may be imposed on any
articles of personal property purchased under this contract, but this provision shall in no way effect the right of the
Vendor in making any claim to the Federal Government that sales taxes cannot be collected by the Federal
Government on articles sold to a Municipality.

The Said Vendor hereby certifies under the penalties of perjury that, to the best of their knowledge has filed
all State tax returns and paid all State taxes required under law. This provision is in accordance with M.G.L. Ch.
62C, Sec 49A.

In Witness Whereof the Town caused these presents to be signed in triplicate (3) and approved by its Town
Manager and the said Vendor has caused the presents to be signed in triplicate (3) and its official seal to be hereto
affixed by its officer or agent thereunto duly authorized (by the attached corporate resolution). This instrument shall
take effect as a sealed instrument.
**CONTRACT FOR:** Geotechnical Services

**CONTRACT DURATION:** Through August 1, 2016

**CONTRACT AMOUNT:** Four Thousand, Nine Hundred and Thirty Six Dollars.

**VENDOR NAME & ADDRESS:**

Costa Consulting Engineers
104 Moody Street
Ludlow, MA. 01056

**TELEPHONE:** 413-583-4377

---

The Vendor hereby acknowledges acceptance of the terms and conditions contained in this CONTRACT and in the following named attachments:


Owner reserves right to reduce cost for piezometer installation and monitoring based on observed on site conditions.

---

**VENDOR:** George Costa  
(Authorized signature)  
DATE: 6-20-16

**NAME:** George Costa  
(Please type or print)  
TITLE: President  
CORPORATE SEAL

13-4318747  
(Social Security or Federal Identification Number)

---

**DEPARTMENT HEAD**  
(6-21-16)

**ASSISTANT COMPTROLLER**  
6/22/16

**TOWN MANAGER**  
(6/27/16)

---

**VENDOR NUMBER:** 28272

**DATE:**  

**BUDGET LINE(S):**  

---
Town of Amherst

CONTRACT

Term and conditions

This CONTRACT between the Town of Amherst, a Municipal Corporation in the County of Hampshire and in the State of Massachusetts, acting through its Office of Purchase and its Purchasing Agent and Vendor.

Witness that the consideration hereinafter mentioned, the Vendor hereby agrees to furnish and deliver, at such places and at such times as shall be designated by the Town, in accordance with the proposal and specifications as outlined on the attached proposal or document executed by said Vendor.

This CONTRACT shall be enforced for the period stated by said Town or as stated in the proposal which is incorporated herein by reference.

This CONTRACT shall not be altered in any particular without the consent of all parties to this CONTRACT endorsed hereon unless the Town Manager shall otherwise order, and all alterations must be in writing. All payments for any work done under any such alteration shall be made at the time of the final payment on this contract, unless otherwise authorized by the Town Manager, which authorization shall be specified in the modification to the CONTRACT.

This CONTRACT is not effective until signed by the Town Manager of said Town.

The Town hereby agrees with the Vendor to pay for said commodities/service at the times and in the manner specified in said proposal.

This Contract shall be deemed to be a Massachusetts contract and its interpretation and construction shall be governed by the laws of Massachusetts and the Charter and Bylaws of the Town of Amherst.

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The Said Vendor hereby certifies under the penalties of perjury that, to the best of their knowledge has filed all State tax returns and paid all State taxes required under law. This provision is in accordance with M.G.L. Ch. 62C, Sec 49A.

In Witness Whereof the Town caused these presents to be signed in triplicate (3) and approved by its Town Manager and the said Vendor has caused the presents to be signed in triplicate (3) and its official seal to be hereto affixed by its officer or agent thereunto duly authorized (by the attached corporate resolution). This instrument shall take effect as a sealed instrument.
TOWN OF AMHERST
TOWN HALL
4 BOLTWOOD AVENUE
AMHERST, MASSACHUSETTS 01002
413 259-3026

CONTRACT NUMBER
1700056-2

CONTRACT FOR:  Land Surveying Services - 43 Amity Street, Amherst MA.

CONTRACT DURATION:  6 Months

CONTRACT AMOUNT:  Five Thousand, Five Hundred Dollars

VENDOR NAME & ADDRESS:  Berkshire Design Group
                        4 Allen Place, Northampton, MA 01060

TELEPHONE:  413-382-7000

The Vendor hereby acknowledges acceptance of the terms and conditions contained in this CONTRACT and in the following named attachments:

VENDOR:  [Signature]
NAME:  David R. Elberg
TITLE:  Survey Manager
CORPORATE SEAL

DATE:  8-17-16

DEPARTMENT HEAD
DATE

COMPTROLLER
DATE

TOWN MANAGER
DATE

VENDOR NUMBER:  3303

DATE:  

BUDGET LINE(S)
214015 - 500000 - 16.6.15
211008 - 500000 - 5.318.16.
Town of Amherst

CONTRACT

Term and conditions

This CONTRACT between the Town of Amherst, a Municipal Corporation in the County of Hampshire and in the State of Massachusetts, acting through its Office of Purchase and its Purchasing Agent and Vendor.

Witness that the consideration hereinafter mentioned, the Vendor hereby agrees to furnish and deliver, at such places and at such times as shall be designated by the Town, in accordance with the proposal and specifications as outlined on the attached proposal or document executed by said Vendor.

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The Town hereby agrees with the Vendor to pay for said commodities/service at the times and in the manner specified in said proposal.

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In Witness Whereof the Town caused these presents to be signed in triplicate (3) and approved by its Town Manager and the said Vendor has caused the presents to be signed in triplicate (3) and its official seal to be hereto affixed by its officer or agent thereunto duly authorized (by the attached corporate resolution). This instrument shall take effect as a sealed instrument.
Existing Conditions Report and Concept Design Structural Narrative
August 23, 2016

BUILDING DESCRIPTION

The building consists of two portions constructed at different times. The original portion ranges from two to four stories with a basement and was constructed in 1927. An addition, constructed in 1991, is two stories with a basement. The two portions are structurally connected at the transition.

EXISTING CONDITIONS

Dan Foiles of RSE Associates visited the Jones Library in Amherst, MA on August 11, 2016 to observe the existing condition of the structure. The survey was limited to visual observations only without exposing structure covered by architectural finishes. In addition to the site visit, we studied the original structural drawings for the 1927 portion (dated June 18, 1927) and the architectural and structural drawings for the 1991 addition (dated April 11, 1990). The focus of the investigation was on the 1927 portion because the 1991 portion is proposed to be demolished.

A10 FOUNDATIONS/ BASEMENT

The original foundations consist of concrete foundation walls and spread footings. During construction of the 1991 addition, the 1927 foundations were reinforced with concrete underpinning at several locations at the northeast of the 1927 portion.

- The concrete foundation appears to be in generally good condition with only isolated cracking (Photo 1).
- We observed several areas with signs of water infiltration at exterior foundation walls (Photo 2 and 3).
- In a storage room on the east side of the building we identified one spot of concrete deterioration consisting of spalled concrete exposing corroded reinforcing (Photo 4).

B10 SUPERSTRUCTURE

The floor framing consists of steel beams supporting either concrete pan-joists or concrete joists with terracotte infill between joists. The roof framing consists of steel trusses supporting a concrete flat slab.

- The general condition of the superstructure is unknown because of the inability to directly observe the steel framing or the concrete pan-joist floors. We did not observe any indirect signs of distress or other signs that the superstructure has deteriorated such as excessive deflection or cracking of the architectural finishes.
- We observed several locations with signs of water infiltration (Photo 5). Several instances were at the exterior of the building and one was at the transition from the 1927 portion to the 1991 portion.
- We observed deterioration of the underside of the porch roof on the east side of the building (Photo 6).
- We identified one location with rotted exterior trim (Photo 7) which appears to have been temporarily patched.
C10 MASONRY BEARING WALLS

The masonry bearing walls consist of either solid brick or solid brick with a stone veneer. The masonry bearing walls support the steel floor framing.

- The stone wall veneer is in good condition with very limited signs of cracking or grout deterioration (Photo 8).
- The brick walls are in generally good condition with isolated areas of deteriorated grout (Photo 9).

REHABILITATION OF EXISTING STRUCTURE

This section identifies the work recommended to rehabilitate the existing structure and address the issues identified during the existing conditions.

A10 FOUNDATIONS/ BASEMENT

- At areas with signs of water infiltration, we recommend that the concrete be sounded to identify any delaminated concrete. If delaminated concrete is discovered, the affected concrete should be repaired.
- The spalled concrete in the storage room on the east side of the building should be repaired. During the repair the full extent of concrete deterioration should be identified by sounding the concrete adjacent to the repair.

B10 SUPERSTRUCTURE

- At areas with signs of water infiltration, the architectural finishes (plaster, wood trim, etc.) should be removed to expose and allow direct observation of the structure. The structure should be evaluated to determine if there is any deterioration due to the water (corrosion of the steel frame and delaminated or spalled concrete).

C10 MASONRY BEARING WALLS

- Where the brick mortar is deteriorated, the brick should be repointed.

PROPOSED ADDITION AND RENOVATION STRUCTURAL NARRATIVE

The proposed work consists of demolition of the 1991 portion of the building and the northwest wing of the 1927 building. The drawings produced by Finegold Alexander Architects and dated July 27, 2016 provide the basis for the concept design of the proposed addition and renovations of the existing 1927 building to remain.

A10 FOUNDATIONS/ BASEMENT

The new foundation will consist of cast-in-place concrete walls and footings and a concrete elevator pit. The basement floor will be slab on grade. We do not anticipate the need for any underpinning of the existing structure.
B10 SUPERSTRUCTURE

The new superstructure will consist of steel framing with moment frames for the lateral force resisting system. The steel framing will support concrete on metal deck floors and roof. The steel beams will be composite with the concrete on metal deck.

There are several openings in the existing 1927 building that will be infilled. The openings will be infilled with concrete on metal deck supported by steel framing connected to the existing structure.

D10 IMPACT ON EXISTING STRUCTURE

The proposed alterations to the existing structure fall under the code classification “Alteration - Level 2.” This does not require an analysis of the structures lateral load carrying capacity. However, the demolition of the northwest wing of the 1927 portion reduces the lateral load carrying capacity of the structure. Our preliminary analysis indicates that the remaining structure has sufficient lateral capacity to resist the reduced current code-level seismic forces, as required by the Massachusetts State Building Code, 8th Edition.

The new structure will be seismically isolated from the existing structure to eliminate interaction between the new and existing structures. If the new and existing structures were connected, the variation between the structures' stiffness and response to a seismic or high wind event would result in damage to the existing structure before the lateral system of the new structure could engage.

PHOTOS
Photo 1 – Example of isolated crack in concrete foundation wall over door.

Photo 2 – Signs of water infiltration on the concrete foundation wall.
Photo 3 – Signs of water infiltration on the concrete foundation wall in the mechanical room.

Photo 4 – Spalled concrete exposing corroded reinforcing.
Photo 5 – Sign of water infiltration at the west perimeter of the 1927 building.

Photo 6 – Deterioration on the underside of the porch roof overhang on the east elevation.
Photo 7 – Isolated location of rotted exterior trim with temporary patch.

Photo 8 – General condition of stone veneer.
Photo 9 – Example of an isolated location with deteriorated grout.
JONES LIBRARY
AMHERST, MA

Town of Amherst
Town Hall
4 Boltwood Ave.
Amherst, MA 01002

Costa Consulting Engineers, Inc.
104 Moody St.
Ludlow, MA 01056

7/29/16
COSTA CONSULTING ENGINEERS

104 MOODY ST
LUDLOW, MA 01056

TEL: 413-583-4377
FAX: 413-583-4486

WWW.COSTACONSULTINGENGINEERS.COM

7/29/16

Town of Amherst
Town Hall
4 Boltwood Ave
Amherst, MA 01002

Attention: George Barnes (Colliers International)
Project Manager

Re: Jones Library
Preliminary Geotechnical Investigation
Amherst, MA
CCE File No 270

Mr. Barnes:

This report summarizes the results of a subsurface investigation for the referenced project. The property investigated is identified as the Jones Library located at 43 Amity St. in Amherst, MA. Presented in this report are the results from test borings performed under the inspection of CCE, results from laboratory testing, and a summary of foundation construction recommendations.

EXHIBITS
The following exhibits are included in this report:

<table>
<thead>
<tr>
<th>Exhibit No.</th>
<th>Title</th>
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<tbody>
<tr>
<td>Fig. No. 1</td>
<td>Site Location Plan</td>
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<td>Dwg. No. 1</td>
<td>Boring Location Plan</td>
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<td>Dwg. No. GS-R</td>
<td>Geotechnical Reference Standards</td>
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<td>Appendix A</td>
<td>Boring Logs</td>
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<td>Appendix B</td>
<td>Laboratory Test Data</td>
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1.0 PURPOSE AND AUTHORIZATION
The purpose of the work was to perform a geotechnical investigation to develop preliminary geotechnical and foundations design recommendations for schematic design of a proposed 50,000 square foot (sf) addition to the library.
CCE has made use of data acquired from a site surface and subsurface investigation, along with geological maps, and publications describing conditions for the site and the geographic area.

Authorization for this work was provided by the Town of Amherst on 6/22/16 and in accordance with Contract No. 16002109. The work was coordinated with Colliers International.

2.0 SCOPE OF SERVICE

The scope of service performed by CCE to meet the above stated purpose for geotechnical engineering services includes the following:

1. Engage a drilling contractor to drill three test borings, install one piezometer, and collect samples.
2. Inspect the boring operations and measure groundwater levels.
3. Perform laboratory testing.
4. Evaluate the subsurface conditions and prepare a report containing geotechnical design and construction recommendations.

3.0 SPECIAL TERMS, CONDITIONS, AND LIMITATIONS

The following are special terms, conditions, and limitations of this report.

1. The analyses and recommendations submitted in this report are based in part upon the data obtained from a limited number of borings. The variation between these borings may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

2. The generalized soil profile described in this report is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced borings and samples; actual soil transitions may be more erratic.

3. Water level measurements at the site have been made by CCE and reflect conditions at that time. Fluctuations in the groundwater level may occur due to variations in rainfall, temperature, and other factors occurring since the time observations were made.

4. In the event that any changes in the proposed general project development are planned, (e.g. elevations, structural loads, structural geometry and locations, etc.), the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed by and conclusions of this report modified or verified in writing by CCE. CCE requests the opportunity to review final design plans and specifications in order to verify that earthwork and foundation recommendations have been properly interpreted and implemented.
5. It is also recommended that CCE be provided the opportunity to perform construction phase inspection to verify that the intent of the recommendations provided by CCE are being properly implemented in the field during construction. The recommendation given in this report shall not be considered valid unless CCE is given the opportunity to perform in this manner.

6. This report is partially based on USGS data and data developed by others referenced herein unless noted otherwise. No warrantees, expressed or implied, are made to the accuracy of data developed by others. All elevations are referenced to USGS NGVD datum unless noted otherwise.

7. This report has been prepared exclusively for the Town of Amherst for the specific application to the Jones Library in Amherst, MA. This report follows in accordance with generally accepted soil and foundation engineering practices. No other warrantees, expressed or implied, are made. Under no circumstances shall the information provided by CCE under Contract 16002109 be transferred to a third party. Under no conditions does CCE claim liability as a result of information passed to a third party without approval of CCE in writing.

4.0 PROJECT INFORMATION

CCE has reviewed the following information provided by Colliers International:

- Partial Drawing A0.1 “Site Plan”, prepared by Mark Mitchell Assoc., dated 4/11/90, scale: 1/16”=1'-0’”,
- Partial Drawing “Proposed Boring Locations RSE Associates” dated 4/20/16, no scale,
- Boring logs B1 through B6 dated 10/13/88 and 10/14/88 and the associated boring location plan for a former library addition,

The project is in schematic design phase and therefore detailed project information was not available at the time of this report. CCE understands that the addition footprint will be approximately 35ft x 130ft and located at the north side of the existing library building. The addition height, basement elevation (if any), first floor elevation, frame type, column and wall loads, and exterior façade type have not yet been determined. The existing garden area and retaining wall located at the north side of the library will have to be removed prior to construction of the addition.

CCE reviewed architectural and structural drawings for a library addition constructed in the 1990s and determined that the lowest floor slab elevation at the north side of the building is approximately FL 319ft. CCE has assumed that the proposed addition will have the same lowest slab elevation. This assumption was used to estimate new foundation depths.
5.0 SITE DESCRIPTION

The site location, shown on Figure 1, is at 43 Amity St. in Amherst, MA. The site is surrounded by Amity St. and retail buildings to the south, a fire station and retail buildings to the east, a parking lot to the north, and North Prospect St. and the Strong House Historical Museum to the west.

The site gradually slopes down from El. 328 ft at the south side to El. 319 at the north side. A garden area and retaining wall are located at the north side of the library and ground surface elevations range between El. 319 ft and 321 ft within the garden area and between El. 325 ft and 321 ft at the retaining wall area. Most of the ground cover surrounding the library is grass with exception of the asphalt paved driveway that extends along the east side of the site and several asphalt paved walks that extend about the north garden area.

The library consists of a 4 level building with a brick, stone and siding exterior. In the 1990s, an addition was constructed at the north side of the library. The ground surface along the north side of the library was lowered by about 8 ft and the existing basement at that time was renovated into finished space. The addition included under-pinning the northeast corner of the existing building. Design plans for the work show the addition is a footing-supported, steel framed structure with the lowest slab level at about El. 319 ft. Also constructed at that time were the north garden area, a garage and retaining wall at the northeast corner of the site. Some site re-grading north of the library within the garden area was required as part of the 1990s addition. CCE understands that groundwater was encountered during excavation for the elevation pit and stairwell area located along the west side of the addition.

6.0 GEOLOGY

According to the Natural Resources Conservation Service (NRCS), the site’s soil within the upper 5 ft is classified as Paxton Charlton Urban Land with 3 to 15 percent slopes. The soil consists of fine sandy loam and gravelly sandy loam. The parent materials are loamy eolian deposits over dense sediment till derived from granite and gneiss.

USGS maps indicate the surficial geology for the site consists of glacial outwash deposits underlain by till. Glacial outwash consists of coarse sand gravel, and occasional cobbles and boulders which were deposited by meltwater streams originating from the glaciers. Below the glacial outwash is till, which is a non-sorted mixture of gravel, sand, silt and clay in differing proportions. The till consists of two types – an upper sandy layer commonly less than 10 ft thick underlain by a very dense till consisting of a greater proportion of silt and clay and less sand, and can be more than 100 ft thick. Typically, till overlies bedrock. USGS maps indicate the bedrock surface at about El. 240 ft, which is about 80 ft below the proposed addition area.
7.0 SUBSURFACE INVESTIGATION

Field
Three borings, B-201 through B-203 were drilled on 7/22/16 by Drilex Environmental of West Boylston, MA. Boring locations are shown on Drawing 1. Boring B-202P includes a piezometer to measure groundwater levels.

The borings were drilled by a track mounted CME 55LC drill rig using 4.25in. inside diameter hollow stem auger (HSA) with a conical bit and plug. Standard Penetration Tests (SPT) were performed by using a 2in. outside diameter split spoon with NWJ rods and an automatic hammer weighing 140lbs and falling 30in.

Borings were generally sampled at two foot intervals within the upper 10ft and then at 5ft intervals until terminating the borings. Boring depths range from 31.3ft to 32ft and average 31.6ft. Boreholes were backfilled with drill cutting and grass areas were raked smooth.

A 2in. diameter piezometer was installed at 20ft deep at boring B-202P, and consists of a 10ft long slotted PVC screen and a 10ft long solid PVC standpipe riser terminating at the ground surface. A flush mounted steel cover was set into concrete to protect the piezometer.

CCE prepared boring logs for each boring and documented drilling conditions, soil sample classification, and water level measurements in the field. Samples were then returned to the office of CCE for reclassification and boring logs were modified as necessary. Final boring logs are included in Appendix A.

CCE returned to the site on 7/23/16 to measure the groundwater level in the piezometer B-202P

Laboratory
Two soil samples were selected from assumed proposed excavation depths for gradation testing in accordance with ASTM D422 to determine suitability for reuse on site.

8.0 SUBSURFACE CONDITIONS

The general subsurface profile for the site consists of approximately 3in. of topsoil or 2.5in. of asphalt pavement underlain by 8.5ft of a discontinuous upper sand stratum, 14.3ft of a second sand stratum followed by till. The groundwater depth was about 14.2ft, which is equal to El. 304.3ft.

Each stratum is described in greater detail and in order of increasing depth.

Topsoil or Asphalt Pavement – The topsoil stratum was encountered at Boring B-201 and B-203 and consists of dark brown silt, with some sand and roots, and a trace of gravel. The Unified Soil Classification System (USCS) symbol is ML. Where found, the
stratum thickness ranges from 3in. to 4in. The asphalt pavement was encountered at Boring B202P and is 2.5in. thick.

Stratum S1 – Sand This discontinuous stratum was encountered at Boring B-201 and B-203 and consists of brown silt with a trace of sand and gravel or brown fine to medium sand with some silt and some to trace gravel. The USCS symbols area ML and SM. The stratum thickness ranges from 8ft to 9ft and averages 8.5ft. N values range from 9 to 35 and average 22. This stratum was not encountered at Boring B-202P because the ground surface was previously excavated by about 8ft during the library addition in the 1990s.

Stratum S2 – Sand This stratum was encountered at all borings and consists of brown fine to medium sand with come to trace silt and come to trace gravel. The USCS symbols are SP, SP-SM, and SM. The stratum thickness ranges from 8ft to 19ft and averages 14.3ft. The N values range from 19 to 66 and average 44. The top of this stratum dips down to the north from El. 317ft at Boring B-201 to El. 311ft at Boring B-203.

Stratum T – Till This stratum was encountered at all borings and consists of brown silty fine to medium sand with some to trace gravel. The USCS symbol is SM. The soil color changed to brown-gray at about 30ft below the ground surface at Borings B-202P and 203, and drilling became harder at this depth. The soil at this depth is a mixture of sand with an increased percentage of silt. N values range from 75 to more than 100 and average 105. Sampling with the Till stratum often resulted in spoon refusal, which occurs when more than 60 drops of the hammer is required to advance to spoon sampler 6in.

Groundwater The groundwater level was measured over two days at Piezometer B-202P and depths to the groundwater were 14.15ft, which equals El. 304.35ft.

9.0 FOUNDATION DESIGN RECOMMENDATIONS
Subsurface conditions indicate spread footings are suitable for foundation support of the building addition provided that over-excavation of interior footings are performed.

Bearing Capacity
The allowable bearing capacity is as follows:

<table>
<thead>
<tr>
<th>Bearing Stratum</th>
<th>Net Allowable Bearing Capacity, tons per square foot (tsf)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undisturbed S2 Stratum or Compacted Structural Fill</td>
<td>3.0 (B≥2 for continuous wall footing)</td>
</tr>
<tr>
<td></td>
<td>3.0 (B≥3 for isolated column footing)</td>
</tr>
</tbody>
</table>

* B = minimum footing width in feet.
Footings within areas of potentially freezing air temperatures should have a minimum 4ft. embedment depth measured from the bottom of the footing to the lowest adjacent ground surface exposed to freezing conditions. Footings within areas of permanently heated space should have a minimum 2ft. embedment depth measured from the bottom of the footing to the slab surface.

The S2 Bearing Stratum elevation decreases towards the north side of the site. This could result in the interior shallow footings not extending deep enough to bear on the S2 stratum. Therefore, the interior footings should be over excavated 2ft below the footing bottoms and then backfilled with Structural Fill in 12in. loose lifts and compacted in accordance with the Compaction Schedule in this report. When fill is placed under footings, the footing zone of influence is considered to extend a minimum of 1ft laterally beyond the outer edge of the footing down a 1 horizontal to 1 vertical (H:V) slope to the bottom of the excavation.

The coefficient of friction against sliding between the concrete footing and soil base is 0.46 for concrete cast onto undisturbed Sand or compacted Structural Fill.

Underpinning the existing library's foundation may be necessary if the proposed addition will be founded adjacent to and lower than the existing library foundation. Grading plans were not available at the time of the report to make a determination.

**Settlement**
Maximum settlement due to footing load for the allowable bearing capacity is estimated to be approximately 1in. or less and most of this settlement is expected to occur during construction. Differential settlement is estimated to be approximately 0.5in. or less.

Construction joints should be incorporated wherever the new structure connects with existing structures to accommodate potential differential settlement at those locations.

**Seismic**
The ground is not susceptible to liquefaction as described in the 8th Edition of the Massachusetts State Building Code.

For seismic design and in accordance with the code, the site is classified as Site Class “C” for site amplification potential.

Mapped Spectral Accelerations (2% Probability of Exceedance in 50 years) for the site are:

\[ S_a = 0.230 \text{ g (at 0.2-sec period)} \] (i.e., short period)
\[ S_l = 0.067 \text{ g (at 1-sec period)} \] (i.e., long period)

**Groundwater**
The design groundwater level is 14.15ft below the road surface which equals El. 304.35ft.
Lateral Loads
Retaining Walls
The total unit weight of compacted Structural Fill is 140 pcf, and coefficients of lateral pressure for Structural Fill against a wall that is not restrained at its top are as follows:

\[ \text{Coefficient of active pressure, } K_a = 0.33 \]
\[ \text{Coefficient of passive pressure, } K_p = 3.0 \]

Basement Walls
The coefficient of lateral pressure for a wall restrained at its top, such as a basement wall, is:

\[ \text{Coefficient for at-rest condition, } K_0 = 0.5 \]

A vertical uniform surcharge load equal to 250 pounds per square foot (psf) on the retained earth-side of all walls should be accounted for in the design.

Retaining and basement walls must be backfilled with free-draining Structural Fill and must have wall drains to prevent the development of hydrostatic forces, which can damage the wall. Over-compacted backfill against a wall results in increased horizontal stresses which can damage the wall.

Floor Slab
The ground floor slabs can be designed as slabs on grade. An 8in. thick base course layer of compacted Structural Fill should be placed directly under the slab and on undisturbed subgrade or compacted Structural Fill. A vapor barrier should be placed on top of the base course.

Wall Drainage Systems
A foundation wall drain system should be installed at locations where the exterior grade is above the ground slab elevation. This should consist of 4 in. diameter perforated PVC pipe surrounded with at least 6 in. of ¾ in. Crushed Stone and wrapped with Mirafi 140N nonwoven filter fabric with fabric edges overlapping by at least 12 in. The pipe perforations should be positioned down and alongside the wall footing. The exterior wall that retains earth should be damp-proofed and a drainage board should be applied to the outside face of the wall.

Drainage pipes should be designed to flow by gravity and preferably to a drainage catch basin on site. If this is not possible, drain lines should be directed to sump pits with automatic pumps installed to pump water from the sump pits into the local storm sewer system. Alarms and backup pumps with emergency power should be installed in case of pump failure.

Drain pipe clean outs should be installed at every pipe direction change, branch ends, and at least every 100 feet of pipe length.
We recommend that the final grade adjacent to the exterior basement walls be designed to slope away from the building. Also, the top foot of the backfill placed around the walls should consist of low permeability soil such as clayey topsoil. Roof drains should connect to storm drains and not discharge to the ground.

Laboratory test results
Laboratory test results indicate the onsite soils from the S1 and S2 Strata are too silty to qualify as Structural Fill. However, the onsite soils can be used as Common Fill within landscape areas.

Pavement Design

<table>
<thead>
<tr>
<th>Area</th>
<th>Pedestrian</th>
<th>Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Wearing Course</td>
<td>2.5in. Class 1, I-1 Standard Top</td>
<td>1.5in. Class 1, I-1 Standard Top</td>
</tr>
<tr>
<td>Bottom Binder Course</td>
<td>-----------</td>
<td>2.5in. Class 1, I-1 Intermediate Dense Binder</td>
</tr>
<tr>
<td>Base Course</td>
<td>8in. Structural Fill</td>
<td>12in. Structural Fill</td>
</tr>
</tbody>
</table>

10.0 CONSTRUCTION RECOMMENDATIONS

Earthwork
The site should be cleared, grubbed, and striped of topsoil. Pavements, underground pipes, manholes, old foundations, etc. should be removed from the limits of work. Organic matter or construction debris is not suitable for foundation support and if encountered within the excavation area, then it should be removed. The site should then be rough graded followed by proof-rolling the building subgrade and any proposed fill areas with a 10 ton vibratory roller. A minimum of four overlapping passes should be made, in two perpendicular directions. Smaller areas should be compacted using at least four passes of a walk-behind vibratory roller or vibratory plate compactor. Careful observation should be made during subgrade compaction in order to identify any areas of soft, yielding soils that may require over-excavation and replacement.

Removal of large trees generally result in large, root ball excavations or depressions several feet deep. After removal, the areas should be over-excavated and properly backfilled and compacted.

The final excavation for footings and slabs-on-grade should be performed carefully using a smooth bladed bucket to minimize disturbance of the bearing surface.

Any loose or disturbed soil should be removed from the bottom of the footing excavation, and the subgrade should be compacted with at least 3 passes of a vibratory compactor weighing at
least 450 pounds and imparting an impact load of at least 2.5 tons. If compaction causes “pumping” of the subgrades, compaction should be halted. In that case, final preparation of the subgrade may have to be performed by hand. When removal of cobbles and boulders leaves depressions more than 6 inches deep at the bearing surface level, the depressions should be backfilled and compacted with Structural Fill or 3/4in. Crushed Stone.

Bearing surfaces should be free of standing water, frost, and loose soil prior to placement of reinforcing steel and concrete.

Fill
Fill within the building footprint, pavement base course and wall backfill should consist only of Structural Fill. Fill below the pavement base course or anywhere within landscape areas can consist of Common Fill.

The minimum percent compaction should be relative to the maximum dry density determined in accordance with ASTM D1557. The in-place density of compacted materials should be determined by a testing agency using nuclear methods in accordance with ASTM D6938. The minimum percent compaction required is as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Minimum Percent Compaction</th>
<th>Frequency per lift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the building footprint</td>
<td>95.0</td>
<td>1 per 2,500sf (grid)</td>
</tr>
<tr>
<td>Column footing</td>
<td>95.0</td>
<td>1 each</td>
</tr>
<tr>
<td>Wall footing</td>
<td>95.0</td>
<td>1 per 50lf</td>
</tr>
<tr>
<td>Pavement base course</td>
<td>95.0</td>
<td>1 per 5,000sf</td>
</tr>
<tr>
<td>Below pavement base course</td>
<td>92.0</td>
<td>1 per 5,000sf</td>
</tr>
<tr>
<td>Landscape areas</td>
<td>90.0</td>
<td>1 per 5,000sf</td>
</tr>
</tbody>
</table>

**Structural Fill (MassDOT M1.03.0 Gravel Borrow, Type B)**

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>% Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 in.</td>
<td>100</td>
</tr>
<tr>
<td>½ in.</td>
<td>50-85</td>
</tr>
<tr>
<td>#4</td>
<td>40-75</td>
</tr>
<tr>
<td>#50</td>
<td>8-28</td>
</tr>
<tr>
<td>#200</td>
<td>0-10</td>
</tr>
</tbody>
</table>

Structural Fill shall consist of inert material that is hard, durable stone and coarse sand, free from organics and clay, surface coatings, deleterious materials, ice and shall conform to the above.
3/4in. Crushed Stone (MassDOT M2.01.4)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1in.</td>
<td>100</td>
</tr>
<tr>
<td>3/4in.</td>
<td>90-100</td>
</tr>
<tr>
<td>1/2in.</td>
<td>10-50</td>
</tr>
<tr>
<td>3/8in.</td>
<td>0-20</td>
</tr>
<tr>
<td>#4</td>
<td>0-5</td>
</tr>
</tbody>
</table>

3/4in. Crushed Stone shall consist of durable crushed rock consisting of angular fragments and be free of clay, loam or other deleterious material with no more than 1.0 percent passing the #200 sieve and shall conform to the above.

Common Fill

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>4in.</td>
<td>100</td>
</tr>
<tr>
<td>No. 10</td>
<td>30-90</td>
</tr>
<tr>
<td>No. 40</td>
<td>10-70</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-15</td>
</tr>
</tbody>
</table>

Common Fill shall consist of inert material that is hard, durable gravel and sand, free from organics and clay, surface coatings, deleterious materials, ice and shall conform to the above.

Dewatering

Dewatering is not expected during construction unless surface runoff or sidewall seepage from precipitation enters the trench. In these cases, minor dewatering can be accomplished by constructing filtered sumps adjacent to each excavation to collect and remove water. If required, each sump should be located just outside the limit of the footing.

Freezing Conditions

If construction work is performed during freezing weather, special measures are required to prevent the subbase and base soils from freezing. The soil below the footings is frost susceptible and if this soil freezes beneath footings, then building settlement can occur.

All subgrades should be free of frost prior to placement of concrete. Footings should be backfilled with soil as soon as possible after footing construction. When freezing temperatures occur, the footing and the ground adjacent to each footing should be insulated. Frozen soil below footing level should be removed and replaced with compacted 3/4in. Crushed Stone. Soil placed as fill should be free of frost, as should the ground on which it is placed.
If you have any questions, please contact us.

Very truly yours,

COSTA CONSULTING ENGINEERS, INC.

By: __________________________

George L. Costa, P.E., President

Attachments
EXHIBITS
APPENDIX A
BORING LOGS
<table>
<thead>
<tr>
<th>DAILY PROGRESS</th>
<th>SAMPLE NO.</th>
<th>DEPTH</th>
<th>BLOWS/5&quot;</th>
<th>SAMPLE DESCRIPTION</th>
<th>STRATA</th>
<th>DEPTH</th>
<th>CASING BLOWS</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>start 13:30</td>
<td>1D</td>
<td>0.0</td>
<td>3-3</td>
<td>Top 5&quot;: brn SILT, some f. sand, roots, trace gravel (ML)</td>
<td>S1</td>
<td>0.42</td>
<td></td>
<td>Grass surface</td>
</tr>
<tr>
<td>Fri 7-22-16</td>
<td>2D</td>
<td>2.0</td>
<td>6-11</td>
<td>Bot 11&quot;: brn SILT, trace f. sand, gravel (ML)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sunny 00 deg.</td>
<td>3D</td>
<td>5.0</td>
<td>0-60/2&quot;</td>
<td>Brown f. SAND, some silt, trace gravel (SM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5.6</td>
<td>Brown SILT, trace f. sand, gravel (ML)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.0</td>
<td>14-12</td>
<td>Brown f-m SAND, trace silt, gravel (SP-SM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.0</td>
<td>21-17</td>
<td>Brown f-m SAND, trace silt, gravel (SP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.0</td>
<td>16-15</td>
<td>Brown f-m SAND, trace silt, gravel (SP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.0</td>
<td>21-42</td>
<td>Dark brown f-m SAND, some silt, trace gravel, (SM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15.0</td>
<td>21-75/2&quot;</td>
<td>No recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20.0</td>
<td>75/3&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stop 16:15</td>
<td>8D</td>
<td>25.0</td>
<td>5'-59</td>
<td>Brown silty f-m SAND, trace gravel (SM)</td>
<td></td>
<td></td>
<td></td>
<td>8D: wet</td>
</tr>
<tr>
<td>Fri 7-22-16</td>
<td>9D</td>
<td>30.0</td>
<td>19-40</td>
<td>Brown silty f-m SAND, trace gravel (SM)</td>
<td></td>
<td></td>
<td></td>
<td>End of boring 32'</td>
</tr>
<tr>
<td>sunny 00 deg.</td>
<td></td>
<td>32.0</td>
<td>58-67</td>
<td>Brown silty f-m SAND, trace gravel (SM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>35.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BORING NO. B-201

SURFACE ELEV. 325

FILE NO. 270

RES. ENGR. G. Costa
COSTA CONSULTING ENGINEERS, INC.

PROJECT: JONES LIBRARY
LOCATION: AMHERST, MA
BORING LOCATION: SEE PLAN

BORING NO. B-201
SHEET: 2 OF 2
FILE NO.: 270
SURFACE ELEV.: 325
DATUM: 

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

<table>
<thead>
<tr>
<th>TYPE OF BORING NO</th>
<th>TYPE OF FEED DURING CORING</th>
<th>CASING USED</th>
<th>DEPTH, FT. FROM</th>
<th>DEPTH, FT. FROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRUCK</td>
<td>MECHANICAL</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKID</td>
<td>HYDRAULIC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BARGE</td>
<td>OTHER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHER</td>
<td>TRACK CME 55LC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TYPE AND SIZE OF:
- D-SAMPLER: SPLITSPoon 1-3/8" ID
- U-SAMPLER: 
- S-SAMPLER: 
- CORE BARREL: 
- CORE BIT: 
- DRILL RODS: NWJ 2-3/8"

DRILLING MUD USED
- CONICAL WITH PLUG
- HSA 4.25 ID

WATER LEVEL OBSERVATIONS IN BOREHOLE

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>DEPTH OF HOLE (FEET)</th>
<th>DEPTH OF CASING (FEET)</th>
<th>DEPTH TO WATER (FEET)</th>
<th>CONDITIONS OF OBSERVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NO OBSERVATION</td>
</tr>
</tbody>
</table>

PEIZOMETER INSTALLED
- YES ❌ NO

STANDPIPE: TYPE
INTAKE ELEMENT: TYPE
FILTER: MATERIAL

PAY QUANTITIES
- 2.5" DIA. DRY SAMPLE BORING
  - LIN. FT.: 32
- 3.5" U-SAMPLE BORING
- CORE DRILLING IN ROCK

BORING CONTRACTOR: DRILEX ENVIRONMENTAL
DRILLER: JASON JALUTKIEWICZ
HELPERS: CHIRS HOGAN

REMARKS: BOREHOLE BACKFILLED WITH CUTTINGS
RESIDENT ENGINEER: GEORGE COSTA
DATE: 7/22/16

BORING NO. B-201
<table>
<thead>
<tr>
<th>DAILY PROGRESS</th>
<th>SAMPLE NO.</th>
<th>DEPTH</th>
<th>BLOWS/8&quot;</th>
<th>SAMPLE DESCRIPTION</th>
<th>STRATA</th>
<th>DEPTH</th>
<th>CASING BLOWS</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>start 00.00</td>
<td>1D</td>
<td>0.3</td>
<td>5-3</td>
<td>Brown f-m SAND, some gravel, trace silt (SP)</td>
<td></td>
<td>0.21</td>
<td>2.5&quot; Asphalt Conc.</td>
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</tr>
<tr>
<td>Fri 7-22-16</td>
<td>2D</td>
<td>2.3</td>
<td>13-6</td>
<td>Brown f-m SAND, some gravel, trace silt (SP-SM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sunny</td>
<td>3D</td>
<td>5.0</td>
<td>2x-31</td>
<td>Brown f-m SAND, some silt, trace gravel (SM)</td>
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<td></td>
<td></td>
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<tr>
<td>70 deg.</td>
<td>4D</td>
<td>7.0</td>
<td>26-22</td>
<td>Brown f-m SAND, some gravel, trace silt (SP-SM)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>5D</td>
<td>10.0</td>
<td>10-11</td>
<td>Brown f-m SAND, trace silt (SP-SM)</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>12.0</td>
<td>19-33</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>6D</td>
<td>15.0</td>
<td>17-30</td>
<td>Brown silty f-m SAND, (SM)</td>
<td></td>
<td>15</td>
<td>6D: wet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17.0</td>
<td>36-43</td>
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<td>7D</td>
<td>20.0</td>
<td>35-53</td>
<td>Brown silty f. SAND, trace gravel (SM)</td>
<td></td>
<td>20</td>
<td>Hard drilling at 19'</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>22.0</td>
<td>47-49</td>
<td></td>
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<tr>
<td>stop 11:15 Fri 7-22-16 sunny 85 deg.</td>
<td>8D</td>
<td>25.0</td>
<td>25-58</td>
<td>Brown silty f. SAND, trace gravel (SM)</td>
<td>T</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26.5</td>
<td>30</td>
<td></td>
<td></td>
<td>30</td>
<td></td>
<td>End of boring 31.3'</td>
</tr>
<tr>
<td></td>
<td>9D</td>
<td>30.0</td>
<td>19-50</td>
<td>Brown-gray SAND and SILT, trace gravel (SM)</td>
<td></td>
<td>31.3</td>
<td>35</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>31.3</td>
<td>75/4&quot;</td>
<td></td>
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<td></td>
<td></td>
<td>50</td>
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</tr>
</tbody>
</table>
COSTA CONSULTING ENGINEERS

PIEZOMETER RECORD

PROJECT  JONES LIBRARY  PIEZOMETER NO. B-202P
LOCATION  AMHERST, MA  DATE OF INSTALLATION 7-22-10
PIEZOMETER LOCATION  SEE PLAN  RES. ENG. G. COSTA
□ SEE SKETCH ON BACK

---

<table>
<thead>
<tr>
<th>STRATA</th>
<th>PIEZOMETER INSTALLATION DETAILS</th>
<th>DEPTH (FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GROUND SURFACE ELEV. 318.5</td>
<td></td>
</tr>
</tbody>
</table>

**PIEZOMETER TYPE: OPEN STANDPIPE**

**INTAKE POINT**
- Depth to bottom, ft = 20
- Depth to top, ft = 10
- Length, ft = 10
- Diameter, ln = 2, ft = 0.17 = 2R

**STANDPIPE/RISER**
- Elevation of rim, ft = 10
- Diameter, ln = 2, ft = 0.18 = 2r

---

<table>
<thead>
<tr>
<th>READING TIME</th>
<th>DEPTH TO WATER</th>
<th>ELEVATION OF WATER</th>
<th>REMARKS</th>
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<tbody>
<tr>
<td>DATE</td>
<td>CLOCK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-22-10 15:30</td>
<td>14.15</td>
<td>304.35</td>
<td></td>
</tr>
<tr>
<td>7-23-10 17:00</td>
<td>14.15</td>
<td>304.35</td>
<td></td>
</tr>
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</table>

---

**GROUND SURFACE ELEV. 318.5**

**PIEZOMETER NO. B-202P**

- Sand  
- Bentonite  
- Gravel  
- Grout
COSTA CONSULTING ENGINEERS, INC.

BORING NO. B-202P
 SHEET 3 OF 3
 FILE NO. 270
 SURFACE ELEV. 318.5
 DATUM 

BORING LOCATION SEE PLAN

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

<table>
<thead>
<tr>
<th>TYPE OF BORING RIG</th>
<th>TYPE OF FEED DURING CORING</th>
<th>CASING USED</th>
<th>DEPTH, FT. FROM TO</th>
<th>DEPTH, FT. FROM TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRUCK</td>
<td>MECHANICAL</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKID</td>
<td>HYDRAULIC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BARGE</td>
<td>OTHER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHER</td>
<td>TRACK OME 55LC</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE AND SIZE OF:</th>
<th>DRILLING MUD USED</th>
<th>CASING HAMMER, LBS.</th>
<th>AVERAGE FALL, IN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-SAMPLER</td>
<td>SLEEVES 1-3/8&quot; ID</td>
<td>CONICAL WITH PLUG</td>
<td>140</td>
</tr>
<tr>
<td>U-SAMPLER</td>
<td></td>
<td>HSA 4.25 ID</td>
<td>AVERAGE FALL, IN.</td>
</tr>
<tr>
<td>S-SAMPLER</td>
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<td>30</td>
</tr>
<tr>
<td>CORE BARREL</td>
<td></td>
<td></td>
<td>AUTOMATIC HAMMER</td>
</tr>
<tr>
<td>CORE BIT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRILL’RODS</td>
<td>NWJ 2-5/8&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

WATER LEVEL OBSERVATIONS IN BOREHOLE

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>DEPTH OF HOLE (FEET)</th>
<th>DEPTH OF CASING (FEET)</th>
<th>DEPTH TO WATER (FEET)</th>
<th>CONDITIONS OF OBSERVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NO OBSERVATION</td>
</tr>
</tbody>
</table>

PIEZOMETER INSTALLED

YES NO

STANDPIPE: TYPE PVC ID, IN. 2 LENGTH, FT. 10 TOP ELEV. 318.1
INTAKE ELEMENT: TYPE SLOTTED PVC OD, IN. 2 LENGTH, FT. 10 TIP ELEV. 298.1
FILTER: MATERIAL SILICA HOLLISTON SAND 1S OD, IN. 7.5 LENGTH, FT. 12 BOT. ELEV. 298.1

PAY QUANTITIES

2.5" DIA. DRY SAMPLE BORING LIN. FT. 32 NO. OF 3" SHELBY TUBE SAMPLES
3.5" U-SAMPLE BORING LIN. FT. NO. OF 3" UNDISTURBED SAMPLES
CORE DRILLING IN ROCK LIN. FT. OTHER:

BORING CONTRACTOR DRILEX ENVIRONMENTAL
DRILLER JASON JALUTKEWICZ
HELPERS CHIRS HOGAN
REMARKS BOREHOLE BACKFILLED WITH CUTTINGS
RESIDENT ENGINEER GEORGE COSTA

DATE 7/22/16
BORING NO. B-202P
# COSTA CONSULTING ENGINEERS, INC.
## BORING LOG

<table>
<thead>
<tr>
<th>SAMPLE NO.</th>
<th>DEPTH (ft)</th>
<th>BLOW/S'</th>
<th>SAMPLE DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1D</td>
<td>0</td>
<td>4-11</td>
<td>Top 3's: dk brn silty f. SAND, some roots (SM)</td>
</tr>
<tr>
<td>2D</td>
<td>2</td>
<td>11-9</td>
<td>Bot 12's: brown silty f-m SAND, some gravel (SM)</td>
</tr>
<tr>
<td>3D</td>
<td>5</td>
<td>5-14</td>
<td>Brown f-m SAND, some gravel, silt (SM)</td>
</tr>
<tr>
<td>4D</td>
<td>7</td>
<td>7-18</td>
<td>Brown-gry f-m gravelly SAND, some silt (SM)</td>
</tr>
<tr>
<td>5D</td>
<td>10</td>
<td>7-24</td>
<td>Brown f-m SAND, trace silt, gravel (SP-SM)</td>
</tr>
<tr>
<td>6D</td>
<td>15</td>
<td>6-9</td>
<td>Brown f-m SAND, some silt, trace gravel (SM)</td>
</tr>
<tr>
<td>7D</td>
<td>20</td>
<td>14-21</td>
<td>Brown f-m SAND, some silt, trace gravel (SM)</td>
</tr>
<tr>
<td>8D</td>
<td>25</td>
<td>35-53</td>
<td>Brown silty f. SAND, trace gravel (SM)</td>
</tr>
<tr>
<td>9D</td>
<td>30</td>
<td>24-50</td>
<td>Brown-gray f. SAND and SILT, some gravel (SM)</td>
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</table>

<table>
<thead>
<tr>
<th>STRATA</th>
<th>DEPTH (ft)</th>
<th>CASING BLOWS</th>
<th>REMARKS</th>
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<tbody>
<tr>
<td>S1</td>
<td>5</td>
<td></td>
<td>Grass surface</td>
</tr>
<tr>
<td>S2</td>
<td>15</td>
<td></td>
<td>6D: wet</td>
</tr>
<tr>
<td>T</td>
<td>25</td>
<td></td>
<td>Hard drilling at 25'</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td></td>
<td>End of boring 31.4'</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40</td>
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<td></td>
</tr>
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<td>45</td>
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</tr>
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</table>

**PROJECT:**
Jones Library
**LOCATION:** Amherst, MA

**BOARING NO.:** D-203
**FILE NO.:** 270
**SURFACE ELEV.:** 320
**RES. ENGR.:** G. Costa

---

**Step:**
**13:00**
**Fri**
**7-22-16**
**sunny**
**85 deg.**

---

**BOARING NO.:** D-203
COSTA CONSULTING ENGINEERS, INC.

PROJECT: JONES LIBRARY
LOCATION: AMHERST, MA
BORING LOCATION: SEE PLAN

BORING NO. B-203
SHEET NO. 3 OF 3
FILE NO. 270
SURFACE ELEV. 320
DATUM

BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE

<table>
<thead>
<tr>
<th>TYPE OF BORING RIG</th>
<th>TYPE OF FEED DURING CORING</th>
<th>CASING USED</th>
<th>DEPTH, FT. FROM TO</th>
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<tbody>
<tr>
<td>TRUCK</td>
<td>MECHANICAL X</td>
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</tr>
<tr>
<td>SKID</td>
<td>HYDRAULIC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BARGE</td>
<td>OTHER</td>
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<td>OTHER</td>
<td>TRACK CNE 55LC</td>
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<table>
<thead>
<tr>
<th>TYPE AND SIZE OF:</th>
<th>DRILLING MUD USED</th>
<th>CASING HAMMER, LBS.</th>
<th>AVERAGE FALL, IN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-SAMPLER SPLITSPoon 1-3/8&quot; ID</td>
<td>NO CONICAL WITH PLUG</td>
<td>140</td>
<td>30</td>
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<td>U-SAMPLER</td>
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<tr>
<td>S-SAMPLER</td>
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</tr>
<tr>
<td>CORE BARREL</td>
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<tr>
<td>CORE BIT</td>
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<tr>
<td>DRILL RODS NWJ 2-5/8&quot;</td>
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WATER LEVEL OBSERVATIONS IN BOREHOLE

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>DEPTH OF HOLE (FEET)</th>
<th>DEPTH OF CASING (FEET)</th>
<th>DEPTH TO WATER (FEET)</th>
<th>CONDITIONS OF OBSERVATION</th>
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<tbody>
<tr>
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PIEZOMETER INSTALLED | YES ✗ NO | SKETCH SHOWN ON

STANDPIPE: TYPE
INTAKE ELEMENT: TYPE
FILTER: MATERIAL

PAY QUANTITIES
2.5" DIA. DRY SAMPLE BORING LIN. FT. 31.4
3.8" U-SAMPLE BORING LIN. FT.
CORE DRILLING IN ROCK LIN. FT.

BORING CONTRACTOR DRILEX ENVIRONMENTAL
DRILLER JASON JALUTKEWICZ
HELPERS CHIRS HOGAN
REMARKS BOREHOLE BACKFILLED WITH CUTTINGS
RESIDENT ENGINEER GEORGE COSTA
DATE 7/22/16
BORING NO. B-203
APPENDIX B
LABORATORY TEST DATA
<table>
<thead>
<tr>
<th>Boring / Test Pit</th>
<th>B-202P</th>
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<tr>
<td>Elevation, FT</td>
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<tr>
<td>Stratum</td>
<td>S2</td>
</tr>
<tr>
<td>USCS</td>
<td>SM</td>
</tr>
<tr>
<td>AASHTO</td>
<td></td>
</tr>
<tr>
<td>D_{10}</td>
<td></td>
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<tr>
<td>D_{50}</td>
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<td>D_{100}</td>
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<tr>
<td>C_{p}</td>
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<td>C_{u}</td>
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<table>
<thead>
<tr>
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<th>Sieve Size (mm)</th>
<th>Percent Passing (by weight)*</th>
<th>Min</th>
<th>Max</th>
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</table>

*Blank cell indicates sieve not used in test.

Notes:
1. Description: Brown f-c SAND, some silt, trace gravel (SM)
<table>
<thead>
<tr>
<th>Boring / Test Pit</th>
<th>B-203</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample No.</td>
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<td>Elevation, FT</td>
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</tr>
<tr>
<td>Stratum</td>
<td>S1</td>
</tr>
<tr>
<td>USCS</td>
<td>SM</td>
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<td>AASHTO</td>
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</tr>
<tr>
<td>$D_{10}$</td>
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<td>$D_{30}$</td>
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*Blank cell indicates sieve not used in test.

Notes:
1. Description: Brown f-e SAND, some gravel, silt (SM)
MECHANICAL AND ELECTRICAL SYSTEMS

SECTION 21000 - FIRE PROTECTION
(Filed Sub-Bid Required)

Existing Fire Protection Systems

The service enters the site via post indicator valve (PIV) was installed at the front of the building entry. A 6" fire protection service enters the building's main mechanical room to provide the fire protection needs. A 6" double check valve is provided with a 6" dry alarm check valve. In this set up, compressed air fills the piping system and seals a check valve; upon activation of a sprinkler head activates the check valve and the piping is charged with water. It is assumed that this system was selected as much of the piping was run within areas of the building that are susceptible to freezing. The system is provided with (1) zone and is comprised of copper piping with soldered fittings and black steel piping with a combination of threaded and roll grooved fittings. A check valve is provided along with a Siamese fire department connection at the front of the building. Sprinkler heads and piping was a combination of exposed and concealed. No standpipes were provided in the building.

Given the scope of the proposed renovations, it is not anticipated for the existing systems to be reused.

Proposed Fire Protection Systems

The building will be provided with a new automatic fire sprinkler and standpipe systems. The fire sprinkler systems will provide coverage for 100% of the building interior spaces. The existing 6" fire protection service will be evaluated for its potential reuse for the intent of this report, all systems shall be considered new. All fire sprinkler systems will be designed and installed in accordance with NFPA-13. All standpipe systems will be designed and installed in accordance with NFPA-14.

The sprinkler systems for the building will be automatic, wet pipe systems that will provide coverage for 100% of the new building interior spaces with the exception of the unheated spaces. All concealed spaces made of exposed combustible construction will be provided with sprinkler head coverage in accordance with code. Attic spaces, if constructed with exposed combustible construction, will be provided with automatic dry pipe sprinkler systems as the attic areas will be unheated. The new fire sprinkler systems and standpipe systems in the building will be supplied via a new underground fire service main connected to the site water main. The new underground fire service main will be brought up into the sprinkler room within the building. The new fire service main will be provided with a new double check valve backflow preventer at the point of entry into the sprinkler room of the building. A new single wet system alarm check valve will be located on the sprinkler system side of the backflow preventer. This wet system alarm check valve and riser will supply all of the sprinkler / standpipe systems in the building. A fire department connection will be located on the outside of the building at a point of vehicle access. The fire department connection piping will be provided with a check valve in accordance with NFPA-13. An electric alarm bell will be provided on the outside of the building adjacent to the fire department connection. A master water flow switch will be provided on the sprinkler/standpipe riser in the sprinkler room. The fire department connection will have the ability to charge all of the sprinkler and standpipe systems in the building.
The sprinkler systems in the building will be supplied via a combination standpipe and sprinkler riser that will be located in a main egress stairway of the building. Each floor will be on a separate sprinkler zone and an isolation zone valve, check valve, flow switch and pressure gauge will be provided on the sprinkler main serving the sprinkler systems of each floor of the building. In this way, each floor of the building will be on a separate sprinkler zone with dedicated isolation and annunciation for that zone. A fire department hose valve will be provided on the combination standpipe and sprinkler riser and will be located for each floor in the stairway. The fire department hose valve will be a 2 1/2 Inch threaded hose end valve with a 1 1/2 inch threaded hose end reducing fitting, cap & chain. An inspector's test and drain valve will be provided at each floor zone station. A drain riser will be provided and will collect the test and drain valves on each floor and will discharge to outside the building. In addition to the combination standpipe / sprinkler riser, an additional standpipe riser will be provided in the second egress stairway of the building. This standpipe riser will be provided with a fire department hose valve at each floor as described above. Both the combination standpipe / sprinkler riser and the standpipe riser shall be provided with an isolation valve at the base of the riser.

All sprinkler and standpipe systems will be designed, tested and installed in accordance with the applicable sections of the Massachusetts State Building Code 8th edition and NFPA-13, NFPA-24 and NFPA-14 latest accepted editions as well as the regulations and guidelines of the local authority. All piping systems will be seismically braced in accordance with the Massachusetts State Building Code 8th edition and NFPA-13. All sprinkler systems will be designed, tested and installed by a sprinkler contractor licensed and experienced in Massachusetts for fire sprinkler systems. The new underground fire service main shall be installed, tested and flushed in accordance with NFPA-24. All sprinkler heads, piping, fittings, devices, valves and all materials associated with the fire sprinkler systems shall be UL listed and/or FM approved for fire protection systems and shall be rated at 175 psi working pressure. All isolation valves shall be electronically supervised.

Rooms that house items of particularly valuable or historic shall be provided with a non-water based suppression system. In this manner no water based piping will be supplied to the room. In the event of a fire a heat/smoke interlock system shall trigger activation of a gaseous suppressant.

This report assumes that the water available in the city water supply is sufficient to provide the automatic fire sprinkler and standpipe systems with the flows and pressures required by NFPA without the need for a fire pump. This report assumes that no fire pump will be required.
SECTION 22000 – PLUMBING
(Filed Sub-Bid Required)

Existing Plumbing Systems

Plumbing Fixtures
Water closets are wall mounted commercial fixtures with 1.6 gpf flush valve operation. Lavatories are wall mounted fixtures with top mounted faucets. (1) Shower was observed in the building.

Plumbing fixtures were generally in poor condition and are showing signs of age and are not water conservation type, it noted that many of these fixtures were ADA compliant.

Domestic water
Domestic cold water is brought into the building via a 2” domestic cold water service which enters the building through the basement mechanical room.

Hot water is produced via (1) tank type gas fired 50 gal. hot water heater. A domestic hot water recirculation system was provided for the building along with a recirculation pump.

Sanitary system
The building’s sanitary system is conveyed thru the building thru copper/cast iron piping. Fixtures are collected together above the ceiling and brought down thru the basement. The exact size and location of this line is unknown.

Storm Drain System
Rain water is conveyed thru exterior gutters and downspouts. Flat areas of the roof are provided with roof drains which run internal and underslab to the storm drain.

Natural Gas system
The natural gas system is supplied by a 2” gas main and meter located at the front of the building. This main supplies the heating boilers and hot water heater with gas.

In general the existing plumbing systems were showings signs of wear and approaching the end of their expected lifetime. Given the scope of the proposed renovations, it is not anticipated for the existing systems to be reused.

Proposed Plumbing Systems

The plumbing existing plumbing utilities will be evaluated for their potential reuse, for the intent of this report all systems for the building will be entirely new and dedicated for the building.

Plumbing Fixtures
All plumbing fixtures shall be code mandated water conservation type. Water closets in shall be Wall mounted fixtures with concealed carriers or floor mounted with floor outlets as required to match the architectural design of the interior spaces in the building. Water closets shall utilize a low water consumption system consisting of 1.28 gpf manual flush valve or flush tank device as required to match the water closet types installed throughout the building. Lavatories shall be wall mounted fixtures with concealed wall carriers and exposed piping beneath the fixture or counter mounted fixtures as required to match the architectural design of the interior spaces in the building. Faucets for all lavatories in private bathrooms shall be single lever metering type with 0.5 gpm operation for water conservation. Lavatories in public bathrooms shall be single lever mixing / metering type with 0.5 gpm operation for water conservation and anti-scald protection. All lavatory faucets shall be field adjustable to produce a maximum of 110 degrees F hot water to prevent scalding. All water coolers shall be ADA compliant.
stainless steel finish double bowl, HI-Low type with electric chiller. Urinals shall be wall mounted with concealed carriers and shall utilize 1.0 gpf manual flush valve devices. Floor drains shall be provided in all public toilet rooms and mechanical rooms as required by code. ADA accessible plumbing fixtures shall be located in the toilet rooms as required by the architectural drawings and in accordance with code. A floor outlet mop basin will also be provided on each level of the building.

Sanitary
The sanitary piping system shall service all of the plumbing fixtures for the building. The sanitary drains shall be collected together and extended to the building foundation wall where they will be connected to the existing sanitary building drain. Cleanouts will be provided in the sanitary piping system in accordance with code. Vent systems will be collected together as much as possible and continued up through the roof thru the roof is available. Floor drains will be provided in toilet rooms and mechanical rooms as required by code. All floor drains in the building shall be provided with trap primer systems. All plumbing fixtures shall be provided with properly vented traps for water seal.

Storm
Drainage piping shall be extended from roof drains and down through the building. The storm drains shall be collected together and extended to the building foundation wall where they will be connected to the existing storm system building drains. Cleanouts will be provided in the storm drain piping system in accordance with code. Cleanouts in underground piping shall be flush with the finish floor. Cleanouts in above ground piping shall be located above ceilings or within walls and shall be provided with access panels.

Cold Water
Cold water will be supplied via a new domestic water service that will be provided from the city water main in the street to the building mechanical room. A new water meter and shut off valves will be provided in accordance with code. All plumbing fixtures will be provided with cold water in accordance with State plumbing code. There will be non-freeze wall hydants located around the existing building, the non-freeze wall hydants will be a flush mounted lock-shield type with integral vacuum breakers. Cold water hose bibbs shall be located in all public toilet rooms in accordance with code. All cold water shall be potable. All water outlets (hose bibbs, wall hydants) shall be provided with backflow devices to protect the potable water supply. All plumbing fixtures shall be of the water conservation type. All plumbing fixtures in the building will be water conservation type.

Cold water connections to all plumbing fixtures or other equipment requiring cold water shall be protected against cross-contamination of the building domestic water system via code approved air gaps, air breaks, integral fixture air gaps or air breaks or approved backflow prevention devices.

Hot Water
Hot water shall be provided with new domestic hot water heater. The hot water supply piping system shall be provided with a dedicated circulating loop which will be connected to the new water heater and provided with a pump and controls to maintain the temperature in the hot water supply system. All of the water piping and fittings in this hot water supply and return loop system shall be insulated. All of the water piping in this supply and return loop system shall be labeled to indicate service and if the piping is a supply or return line.

Natural Gas
A new gas service will be brought to the building. Coordination with the gas company will be performed to insure that the gas supply at the site is sufficient to provide the building with adequate gas volume and pressure for the new proposed equipment and appliances. All gas piping shall be black steel and shall service all heating, plumbing or similar appliances that require natural gas.
SECTION 23000 – HEATING, VENTILATING AND AIR CONDITIONING (HVAC)
(Filed Sub-Bid Required)

Existing HVAC Systems

The existing heating, ventilating and air conditioning systems consist of a central hot water plant, a cooling water plant, air handling units, fan coil units, hot water heaters and general exhaust fans. These systems provide heating and ventilation to all occupied spaces in the building and heating for the entire building.

The central hot water plant is comprised of four gas fired hot water boiler modules (Utica model BOP-77 rated for 260.9 MBH net output); hot water circulating pumps, P-1 and P-2 rated for 109 GPM @ 38°F TDH, that provide heating hot water to heating only piping system and to the dual temperature loop pumping system; the dual water circulating pumps, P-7 and P-8 rated for 53 GPM @ 40°F TDH, that serve the building fan coil units; air separator; and expansion tank located in lower level mechanical space. The hot water is supplied through distribution piping to the fin-tube radiation, cabinet heaters, fan coil units, duct mounted reheat coils and heating terminal equipment throughout the building.

The cooling water system includes a 75-ton water cooled chiller evaporator (York model TCWZ22JN/46PA), circulation pumps and expansion tank located in the lower level mechanical room; and a BAC closed circuit fluid cooler at grade interconnected to chiller with underground piping. The cooling water is supplied through the chilled water pumps, P-3 and P-4 rated for 180 GPM @ 52°F TDH, and distribution piping to air handling units AC-1, AC-2 and AC-7 serving the occupied spaces in the building; and the dual water circulating pumps, P-7 and P-8 rated for 53 GPM @ 40°F TDH, and piping system that serve the building fan coil units. The condenser water pumps, P-6 rated for 257 GPM @ 87°F TDH, and piping system provides condenser water to the chiller; and water pumps, P-5 rated for 30 GPM @ 34°F TDH, and piping system provides condenser to the water to air heat pumps AC-3, AC-4, AC-5 and AC-6.

The Original Building, except the Trustees Room, is provided with heating and cooling by exposed vertical fan coil units and the dual water distribution piping system located along the building perimeter; and heating only cabinet heaters in vestibules, stairs, etc. and the heating water distribution piping system. Ventilation to the original building, except the Trustees Room, is provided through operable window.

Heating, Ventilating and Air Conditioning for the Trustees Room in the original building is provided by AC-7 and a duct mounted hot water reheat coil.

AC-7: HVAC-7 (2,000 cfm) is a MagicAire model 60-BHW-4 heat pump located in an adjacent attic space and interconnected to the condenser water distribution piping system. The unit serves the Trustees Room through a duct distribution system, outdoor intake louver/ductwork, a supply air duct mounted hot water heating coil and a wall mounted thermostat for space zone control.

The air handling units and associated return fans, where applicable, provide ventilating and air conditioning to the 1992 Building Addition through a supply air duct distribution system. Each unit is provided with a wall louver outdoor air intake for building ventilation.

AC-1/RF-1: AC-1 (12,350 cfm) is an Airtherm unit provided with chilled water cooling coil and variable speed drive. The unit is located in a lower level mechanical room and serves the South side of the two level 1992 Building Addition and is provided with pneumatic air valves for zone control; each air valve is provided with a wall mounted pneumatic thermostat for space zone control. RF-1 is the Twin City utility type return fan with variable speed drive, interlocked with AC-1.
AC-2/RF-2: AC-2 (1,135 cfm) is an Airtherm unit provided with chilled water cooling coil and variable speed drive. The unit is located in a lower level mechanical room and serves the North side of the two level 1992 Building Addition and is provided with pneumatic air valves for zone control; each air valve is provided with a wall mounted pneumatic thermostat for space zone control. RF-2 is the Twin City utility type return fan with variable speed drive, interlocked with AC-2.

AC-3: AC-3 (1,600 cfm) is a CommandAire model 514-EA heat pump located in an adjacent attic space and interconnected to the condenser water distribution piping system to provide heating, air conditioning, ventilation, humidification and dehumidification. The unit serves the Special Collections Exhibit Area through a duct distribution system and a supply air duct mounted hot water heating coil and a wall mounted space temperature sensor and wall mounted space humidity sensor for space zone control. Ventilation is provided to the return side of the unit by HV-1. Note: The controls in this area have been upgraded to DDC in 2010.

AC-4: AC-4 (1,200 cfm) is a CommandAire model 414-EA heat pump located in an adjacent attic space and interconnected to the condenser water distribution piping system to provide heating, air conditioning, ventilation, humidification and dehumidification. The unit serves the Special Collections Area through a duct distribution system and a supply air duct mounted hot water heating coil and a wall mounted space temperature sensor and wall mounted space humidity sensor for space zone control. Ventilation is provided to the return side of the unit by HV-1. Note: The controls in this area have been upgraded to DDC in 2010.

AC-5: AC-5 (1,200 cfm) is a CommandAire model 414-EA heat pump located in an adjacent attic space and interconnected to the condenser water distribution piping system to provide heating, air conditioning, ventilation, humidification and dehumidification. The unit serves the Special Collections Stack Area through a duct distribution system and a supply air duct mounted hot water heating coil and a wall mounted space temperature sensor and wall mounted space humidity sensor for space zone control. Ventilation is provided to the return side of the unit by HV-1. Note: The controls in this area have been upgraded to DDC in 2010.

AC-6: HVAC-6 (350 cfm) is CommandAire model SWP-BHW-4 heat pump serving the Communication Room and interconnected to the condenser water distribution piping system. The unit is controlled by a wall mounted thermostat.

HV-1: HV-1 (1,600 cfm) is Airtherm unit provided with unit mounted hot water heating coil and Nortec model NHTC 020 (7.5KW) duct mounted humidifier to provide outdoor air for ventilation to AC-3, AC-4 and AC-5. The unit is ducted to each unit with a motor operated damper interlocked with unit operation and bypass air duct back to the inlet side outdoor air ductwork of the unit for constant volume operation of the unit. Note: Location of the humidifier in the HV 1 ductwork into the return air side of AC-3, AC-4 and AC-5 has proven been to be ineffective in controlling space humidification.

Heating for the 1962 Building Addition is provided by hot water fin/tube radiation interconnected to the hot water heating distribution piping and the zone pneumatic thermostat.

The restroom, janitors closets and other required locations are exhausted through roof mounted fans. The elevator machine rooms have been vented to the hoistways but have not been provided with space temperature control provisions.
Existing automatic temperature controls are pneumatic; the ATC duplex air system compressor is located in the lower level mechanical room. The pneumatics have failed in several areas and have resulted in poor automatic temperature control.

The system components are original construction and have exceeded their anticipated operational life; all existing heating, ventilating and air conditioning systems will be removed in their entirety as part of this renovation.

Proposed HVAC Systems

Existing HVAC systems are to be removed in their entirety.

It is proposed that a new heating and cooling plant be provided to supply hot and chilled water to a four-pipe hydronic distribution to terminal units and coils in the existing and proposed spaces throughout the building. The new high efficiency boilers, evaporative chiller (or heat exchanger), hydronic specialties, circulating pumps and controllers shall be located within the mechanical space designated on the lower level of the proposed addition. Space on the roof of the proposed addition will be utilized for the fluid cooler, the energy recovery air handling units, the condensing unit for the dedicated split system serving the historic collection area, as well as any additional dedicated or split system equipment.

The proposed heating plant will be comprised of three (3) gas fired hot water boilers, three (3) boiler circulation pumps, two (2) hot water system circulating pumps, low loss header, expansion tank, chemical treatment, hydronic piping, combustion air intake piping, vent piping and automatic controls. The boilers will be high efficiency, copper fin tube design with direct vent, each sized with an input capacity of 1,300 MBH based on a redundancy of 50% of the total calculated building heating load. The circulation pumps shall have EC motors or variable frequency drives controlled to maintain differential pressure in the distribution and water flow rates through the boilers. All heating system components and distribution piping shall be insulated in accordance with the current edition of the International Energy Conservation Code and Massachusetts Stretch Code requirements. The heating plant shall be fully monitored and provided with advanced controls including but not limited to occupancy setback, night-time setback, outdoor air reset and modulating/cascading operation.

The cooling system for the building will be provided by a new 180 ton air cooled, evaporative chiller located at grade or on the roof of the proposed addition. Two chilled water circulating pumps, water specialties and automatic controls shall be located in the mechanical space. The circulation pumps shall have EC motors or variable frequency drives controlled to maintain differential pressure in the distribution piping loop and water flow rates through the chiller. All cooling system components and distribution piping shall be insulated in accordance with the current edition of the International Energy Conservation Code and Massachusetts Stretch Code requirements. The cooling plant shall be fully monitored and provided with advanced controls including but not limited to occupancy setback, night-time setback, outdoor air reset and economizer operation.

Ventilation air will be provided by three (3) roof mounted energy recovery ventilators capable of 4,500 CFM supply and exhaust airflow, with insulated duct distributions down through the building via vertical shafts branching horizontally to the various spaces. All vertical shafts shall be fire rated and provided with fire dampers or combination fire/smoke dampers at duct penetrations as appropriate and as required by the International Mechanical Code. Individual fan coil units and vertical shafts will be located on each side of the building to limit the horizontal duct distributions within the building. Insulated hydronic piping shall be extended from the building distribution to heating and cooling coils within each energy recovery unit to condition air being supplied to the building. The proposed new rooftop equipment should be provided with concealment/acoustical sound screening to minimize any objectionable noise transmission or sight lines to neighboring buildings.

The individual occupied areas shall be provided with heating, ventilation and air conditioning through four
pipe fan coil units to maintain a minimum space temperature of 70°F during heating mode and 75°F during cooling mode. Hot water and chilled water coils in each fan coil unit shall be fed by branch piping extended from the building hydronic distribution piping. Ventilation air shall be ducted from the energy recovery units to the return air connection of each fan coil unit, to be mixed and tempered with the return air then circulated to the space through supply ductwork and diffusers. Fan coils shall have fully ducted supply distributions within each space and utilize plenum returns unless prohibited by sound transmission or other constraints. The fan coil units shall be located above ceilings or in vertical cavities/closets, accessible at the common area through lockable panels, doors or the ceiling grid. Units shall be sized for low speed operation to minimize noise transmission to the occupied space. Each unit shall also be provided with an insulated condensate drain pan, overflow sensor and drain pipe, terminating to a location in compliance with the Massachusetts Uniform State Plumbing Code. Each occupied space shall be monitored by a wall temperature sensor, an occupancy sensor and where noted a carbon dioxide sensor. These devices shall be utilized to provide fully automatic and adjustable space temperature control, with 5°F setbacks during unoccupied periods and 10°F setback during night-time periods, and shall be accessible through the facility management system.

Stairwells and entry vestibules shall be provided with heating and air conditioning from a concealed type four pipe fan coil unit to maintain a minimum space temperature of 65°F during heating mode and 80°F during cooling mode. Hot water and chilled water coils in the fan coil units shall be fed by branch piping extended from the building hydronic distribution piping. Each unit shall also be provided with an insulated condensate drain pan, overflow sensor and drain pipe, terminating to a location in compliance with the Massachusetts Uniform State Plumbing Code. These spaces shall be monitored by a wall temperature sensor. These devices shall be utilized to provide fully automatic and adjustable space temperature control, with 10°F setback during night-time periods, and shall be accessible through the facility management system. Each Restroom shall be provided with fin tube radiation to maintain a minimum space temperature of 70°F during heating mode with hot water fed by branch piping extended from the building hydronic distribution piping. These spaces shall be monitored by a wall temperature sensor. These devices shall be utilized to provide fully automatic and adjustable space temperature control, with 10°F setback during night-time periods, and shall be accessible through the facility management system. Restrooms shall also be provided with a minimum of 75 CFM of exhaust air per fixture (water closet, urinal or shower). The exhaust air shall be ducted through the building to the energy recovery units and discharged directly to the outdoors.

Each Janitor Closet shall be provided 75 CFM of exhaust, ducted through the building to the energy recovery units or a roof mounted general exhaust fan and discharged directly to the outdoors.

The Sprinkler Room will be provided with an electric unit heater to maintain a minimum space temperature of 50°F. The unit shall be operated through an integral thermostat and accessible through the facility management system. The Sprinkler Room shall also be provided with a minimum of 0.5CFM of exhaust per square foot of floor area, ducted to the energy recovery units or a roof mounted general exhaust fan and discharged directly to the outdoors.

The Elevator Machine Room shall be provided with a split heat pump system consisting of an indoor evaporator unit and an outdoor air-source heat pump unit to maintain the space temperature requirements of the electronics located in the space. The unit shall be provided with an insulated condensate drain pan, overflow sensor and drain pipe, terminating to a location in compliance with the Massachusetts Uniform State Plumbing Code. The unit shall be operated through a wall mounted thermostat and accessible through the facility management system. The room shall also be vented into the hoistway in accordance with applicable code requirements. The automatic temperature control system shall monitor the status of hoistway vent motorized damper (provided by GC) through the facility management system.
The Tel/Data Room shall be provided with a split system air conditioning system consisting of an indoor evaporator unit and an outdoor air-cooled condensing unit to maintain the space temperature requirements of the electronics located in the space. The unit shall be provided with an insulated condensate drain pan, overflow sensor and drain pipe, terminating to a location in compliance with the Massachusetts Uniform State Plumbing Code. The unit shall be operated through a wall mounted thermostat and accessible through the facility control system.

The Electric Room will be provided with an electric unit heater to maintain a minimum space temperature of 50°F. The unit shall be operated through an integral thermostat and accessible through the facility control system. The Electrical Room shall also be provided with outdoor air intake and exhaust directly to the outdoors, both sized based on the heat rejection/dissipation of equipment (such as transformers) to maintain a maximum space temperature of 95°F. The exhaust and outdoor air intake shall be ducted to roof ventilators or louvers, with a dedicated general exhaust fan operated through a reverse acting space thermostat.

The Historic Collections Room shall be provided with a dedicated environmental control system consisting of an indoor evaporator unit with heating, air conditioning, ventilating, humidification and dehumidification capability; and an outdoor condensing unit to maintain the space temperature and humidity requirements of the sensitive items located in the space. The unit shall be provided with an insulated condensate drain pan, overflow sensor and drain pipe, terminating to a location in compliance with the Massachusetts Uniform State Plumbing Code. The unit shall be operated through a wall mounted thermostat/humidistat and accessible through the facility control system.

Miscellaneous spaces such as storage rooms, mechanical rooms, etc. shall be provided with heating through horizontal or cabinet unit heaters with hot water fed by branch piping extended from the building hydronic distribution piping and controlled by a wall mounted space thermostat. An exhaust air system shall be provided in accordance with applicable code requirements and ducted to the energy recovery units or a general exhaust fan and discharged directly to the outdoors.

The building heating, ventilating and air conditioning system shall be provided with direct digital automatic temperature controls that shall be capable of being monitored/controlled through a facility management system. The facility management system shall be provided with an operator's station, to be located within the mechanical space on the lower level of the proposed addition, as well as accessible through a web-based interface.
SECTION 26000 – ELECTRICAL
(Filed Sub-Bld Required)

Existing Electrical Systems

Normal Power
The existing electrical service is an 800 amp, 277/480 volt 3-phase, service that originates from a National Grid Padmounted transformer. (The transformer is located adjacent to the library.) The KVA size of the transformer was not indicated on its exterior cover. The transformer is a 13.8 KV primary/480 volt secondary 3-phase transformer. The service feeds an 800 amp Current transformer cabinet, in the basement main electrical room (along with the utility meter) via underground feeders. The main electrical room contains an existing 800 amp, 277/480 volt Main Distribution Panelboard (MDP) which contains (4) 100 amp, (2) 250 amp and (1) 300 amp circuit breakers. These breakers feed (3) elevators, panel HG1, the chiller and a 225KVA dry-type transformer. There is a 225 KVA 480 volt/208 volt 3-phase dry-type transformer in the room that feeds an 800 amp, 120/208 volt Distribution Panel. The equipment was manufactured by General Electric, was in good condition, and should be utilized for the proposed renovation/addition. The existing service appears to be appropriately sized for the proposed addition/renovation.

Emergency Power
There are no existing emergency generators on site. There is an Illuminator Lighting Inverter Cabinet, reported to be approximately 5 years old, and appears to be in good working condition and should be considered for re-use.

Exterior Lighting
There were building mounted bracketed, acrylic lensed decorative fixtures with finials and metal banding; and matching fixtures on concrete poles. Incandescent recessed downlights underneath the back door have surpassed their life expectancy. The fixtures are showing signs of aging, contain inefficient metal halide lamps, one lens was cracked, and should be replaced during this proposed renovation/addition.

Interior Lighting
Existing interior lighting consists of a variety of light fixtures. Some rooms contain fluorescent recessed or pendant-suspended light fixtures. The stack areas are illuminated with either inefficient T8-lamped fluorescent linear indirect/direct fixtures, or indirect linear fluorescent fixtures. There are existing rows of inefficient incandescent track lights. Other fixtures include: 2-lamp T-8 industrials in mechanical rooms and basement areas; 1' x 4' fluorescent surface acrylic wraparounds, 1-lamp fluorescent wall-mounted acrylic wrap fixtures in basement hallway; decorative suspended acrylic bowls that are outdated and contain 200 or 400 watt metal halide lamps; fluorescent recessed downlights at the ramp level. The majority of these fixtures are inefficient, approaching the end of their expected life and should be replaced. The Woodbury Room in the basement contains 2' X 2' LED dimmable fixtures that may be considered for re-use The decorative fixtures may be considered for re-use. Exit signs appear to be LED-type exit signs, wired to the Illuminator Lighting Inverter mentioned above.

Lighting Control
Existing lighting control consists mostly wall switches, only a few wall-mounted occupancy sensors. There are presently no daylight sensors controlling fixtures during the day. There is no building-wide lighting control system. There is a bank of dimmer switches in the Woodbury room controlling/dimming the 2 x 2 fixtures mentioned previously.

Fire Alarm
There is an existing conventional zoned Simplex 4002 fire alarm control panel located in the existing
electrical room. The fire alarm panel is monitored through an independent alarm-monitoring company which contacts the Amherst Fire Department, via a dedicated phone line. Fire alarm devices include break-glass manual pull stations, horn/lights, smoke detectors throughout. There is an inadequate quantity of fire alarm devices throughout the building. There are required strobes missing from bathrooms. The existing fire alarm devices and system are antiquated and should be replaced.

**Communications**

The existing telephone communications system enters the building via conduits in the basement, from a Bell System Telephone manhole. The existing telephone and computer system wiring is terminated on one central rack in the basement. The existing wiring should be replaced with new wiring.

**Proposed Electrical Systems**

Preliminary calculations result in an 800 amp 277/480 volt three phase service being required. The existing service equipment can be reused due to its size and relatively good condition and age. The existing breakers in the 480 volt distribution panel and the 208 volt distribution panel could be used to feed new panels on the various upper floors, he newly proposed elevator(s), a new mechanical panel dedicated to new mechanical equipment.

Power shall be distributed throughout the building from the main switchboard to panel boards located on each floor. New electrical closets shall be required for the floor's panel boards and other electrical items. The closets should be stacked over each other, if the architectural plan will allow. Installing feeders to each floor's panels is most economically installed when the rooms are located over each other. The panel boards shall contain circuit breakers that provide overcurrent protection for branch circuits needed for receptacles, lighting, HVAC equipment, plumbing equipment, telephone/data equipment. Any larger electrical loads such as elevators, chillers, electric water heaters shall be connected directly to the 480 volt distribution panelboard.

Rooms shall be provided with receptacles for computers and general-purpose outlets. Offices and conference rooms shall be provided with (1) outlet per wall. All toilet rooms shall be provided with a GFI type receptacle on a dedicated 20 amp, 120 volt circuit.

It is recommended to replace the inefficient lighting with new fixtures throughout. The new lighting fixtures shall be energy-efficient LED-type fixtures. Classrooms, offices and conference rooms shall be provided with indirect/direct pendant fixtures where ceiling heights allow, or recessed indirect/direct fixtures. Fixtures provided on the interior perimeter of the building, will be provided with daylight sensors that will automatically turn fixtures off if daylight is providing a pre-set foot-candle level. Utility rooms and small storage areas will be provided with LED industrial strip fixtures with wire guards. Stairwells shall be provided with well mounted LED fixtures to facilitate maintenance.

Emergency lighting and egress lighting shall be provided to meet the Mass. State Building Code, Articles 1023.0 and 1324.0. New LED energy efficient exit signs shall be provided at all exit ways. A percentage of "norma" lighting fixtures would be connected to the existing emergency inverter system. Quantity of fixtures connected to the inverter system would achieve a minimum of 1 footcandle of lighting as is required at all means of egresses.

A lighting control system shall be provided to meet Chapter 13: Energy Conservation of the Mass. State Building Code. Fixtures in hallways and common areas shall be controlled from the Lighting Control Panel. Smaller offices, classrooms, utility rooms will be provided with wall- or ceiling- mounted occupancy sensors to control fixtures while the room is occupied. Override Control points will be
provided in strategic locations (main office, main entrance) to control lights during off hours. The lighting
control panel would contain programming capability to control lighting based on hours of operation
and/or through occupancy sensors. As mentioned above, some fixtures shall be provided with daylight
sensors which will control fixtures based on a certain pre-set lighting level.

A completely new addressable fire alarm system shall be provided, that meets the Mass State Building
Code, Paragraph 917.0, NFPA 72, Life Safety 101 and Americans with Disability Act (ADA) as well as
any local Fire Department requirements. In general, pull stations will be provided at all exit doors
within 5'-0'; visual alarms will be provided in all rooms, conference rooms, common areas, corridors,
mechanical rooms and toilet rooms. Audio Alarms will be provided in all mechanical rooms, rooms,
common areas and corridors.

Smoke detectors shall be installed in all corridors, storage closets, elevator machine rooms and at the
top of all stairwells. Duct-smoke detectors shall be provided in duct work of all air-handling systems
rated for 2000 CFM or more. A smoke detector connected to the elevator recall shall be located in all
elevator lobbies. A heat detector shall be located in the elevator machine room. The sprinkler system
shall also be connected to the fire alarm control panel through tamper and flow switches. The entire
system shall be monitored via a dedicated phone line to an independent monitoring company, as
presently monitored.

It is recommended that a new main communications closet be supplied with plywood backboards for
the installation of equipment provided by the utility and owner. Dedicated receptacles will be provided
for equipment and the room will be air conditioned to maintain a proper temperature. Smaller IT closets
should be provided on each floor. Maximum distance between any data device and a closet is 285
linear feet of cable. 4' conduits will be provide between the main communication closet and smaller
closets.

Telephone and data shall be wired from each data location to an ICC/MCC (intermediate cross
connection/main cross connection) closet. Devices shall be RJ45 with Cat 6 cables. Telephone cables
shall be punched down on 110 blocks; data devices shall be terminated on 48 Port Patch panels. 110
blocks shall be located on plywood backboards within the telephone closets; Cat 3 telephone cable
shall be run between each ICC provided for owner hub and server equipment. Devices shall be
provided per room, office and conference room.

It is recommended that Wireless Access Points (WAP's) be provided throughout the library for possible
wireless communication.