Request for Proposal # 0059814

For

Cassell Roof Repair

1/24/2020

Note: This public body does not discriminate against faith-based organizations in accordance with the Code of Virginia, § 2.2-4343.1 or against a bidder or offeror because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment.
QUESTIONS: All inquiries for information regarding this solicitation should be directed to: Reed Nagel, Phone: (540) 231-5240 e-mail: nagelr@vt.edu

DUE DATE: Proposals will be received until March 5, 2020 at 3:00 PM. Failure to submit proposals to the correct location by the designated date and hour will result in disqualification.

ADDRESS: Proposals should be mailed or hand delivered to: Virginia Polytechnic Institute and State University (Virginia Tech), Procurement Department (MC 0333) North End Center, Suite 2100, 300 Turner Street NW, Blacksburg, Virginia 24061. Reference the due date and hour, and RFP Number in the lower left corner of the return envelope or package.

*Please note that USPS is delivered to a central location and is not delivered directly to Procurement. Allow extra time if sending proposal via USPS. It is the vendor’s responsibility to ensure proposals are received in the Procurement office at the appropriate date and time for consideration.*

PRE-PROPOSAL CONFERENCE: A pre-proposal conference will be held on February 7, 2020 at 2:00pm. See section VIII. Pre-proposal Conference for additional information.

TYPE OF BUSINESS: (Please check all applicable classifications). If your classification is certified by the Virginia Department of Small Business and Supplier Diversity (SBSD), provide your certification number: ___________. For assistance with SWaM certification, visit the SBSD website at [http://sbsd.virginia.gov/](http://sbsd.virginia.gov/).

___ Large

___ Small business – An independently owned and operated business which, together with affiliates, has 250 or fewer employees or average annual gross receipts of $10 million or less averaged over the previous three years. Commonwealth of Virginia Department of Small Business and Supplier Diversity (SBSD) certified women-owned and minority-owned business shall also be considered small business when they have received SBSD small business certification.

___ Women-owned business – A business concern that is at least 51% owned by one or more women who are U. S. citizens or legal resident aliens, or in the case of a corporation, partnership, or limited liability company or other entity, at least 51% of the equity ownership interest is owned by one or more women who are citizens of the United States or non-citizens who are in full compliance with the United States immigration law, and both the management and daily business operations are controlled by one or more women who are U. S. citizens or legal resident aliens.

___ Minority-owned business – A business concern that is at least 51% owned by one or more minority individuals (see Section 2.2-1401, Code of Virginia) or in the case of a corporation, partnership, or limited liability company or other entity, at least 51% of the equity ownership interest in the corporation, partnership, or limited liability company or other entity is owned by one or more minority individuals and both the management and daily business operations are controlled by one or more minority individuals.
COMPANY INFORMATION/SIGNATURE: In compliance with this Request For Proposal and to all the conditions imposed therein and hereby incorporated by reference, the undersigned offers and agrees to furnish the goods or services in accordance with the attached signed proposal and as mutually agreed upon by subsequent negotiation.

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I acknowledge that I have received the following addendums posted for this solicitation.

1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ (Please check all that apply)

Is any member of the firm an employee of the Commonwealth of Virginia who has a personal interest in this contract pursuant to the Code of Virginia, 2.2 – 3102 - 3112

YES_____________ NO_____________

SIGNATURE ____________________________________ Date: _________________________

01/28/2019
I. PURPOSE:

The purpose of this Request for Proposal (RFP) is to solicit proposals to issue a Purchase Order through competitive negotiations for the construction of the Cassel Coliseum Repair by Virginia Polytechnic Institute and State University (Virginia Tech), an agency of the Commonwealth of Virginia.

II. SMALL, WOMAN-OWNED AND MINORITY (SWAM) BUSINESS PARTICIPATION:

The mission of the Virginia Tech supplier opportunity program is to foster inclusion in the university supply chain and accelerate economic growth in our local communities through the engagement and empowerment of high quality and cost competitive small, minority-owned, women-owned, and local suppliers. Virginia Tech encourages prime suppliers, contractors, and service providers to facilitate the participation of small businesses, and businesses owned by women and minorities through partnerships, joint ventures, subcontracts, and other inclusive and innovative relationships.

III. BACKGROUND:

Virginia Polytechnic Institute and State University (Virginia Tech) is located in Blacksburg, Virginia, approximately 40 miles southwest of Roanoke, Virginia, the major commercial hub of the area. In addition to the university’s main campus in Blacksburg, major off campus locations include twelve agriculture experiment research stations, the Marion duPont Scott Equine Medical Center and graduate centers in Roanoke and Fairfax, Virginia. Regularly scheduled air service is provided at the Roanoke Regional Airport.

Dedicated to its motto, Ut Prosim (That I May Serve), Virginia Tech takes a hands-on, engaging approach to education, preparing scholars to be leaders in their fields and communities. As the Commonwealth’s most comprehensive university and its leading research institution, Virginia Tech offers 240 undergraduate degree programs to more than 31,000 students and manages a research portfolio of nearly $513 million. The university fulfills its land-grant mission of transforming knowledge to practice through technological leadership and by fueling economic growth and job creation locally, regionally, and across Virginia.

The Virginia Tech Athletics Department is looking to repair its’ existing damaged roof located at the main campus. The roof total square footage is roughly 70,000. Multiple areas throughout the roof will need to be repaired as well as a complete replacement to North West corner of the roof that is roughly 7,500 square feet.

IV. eVA BUSINESS-TO-GOVERNMENT ELECTRONIC PROCUREMENT SYSTEM:

The eVA Internet electronic procurement solution streamlines and automates government purchasing activities within the Commonwealth of Virginia. Virginia Tech, and other state agencies and institutions, have been directed by the Governor to maximize the use of this system in the procurement of goods and services. We are, therefore, requesting that your firm register as a vendor within the eVA system.

There are transaction fees involved with the use of eVA. These fees must be considered in the provision of quotes, bids and price proposals offered to Virginia Tech. Failure to register within the eVA system may result in the quote, bid or proposal from your firm being rejected and the award made to another vendor who is registered in the eVA system.

Registration in the eVA system is accomplished on-line. Your firm must provide the necessary information. Please visit the eVA website portal at http://www.eva.virginia.gov/pages/eva-registration-buyer-vendor.htm and register both with eVA and Ariba. This process needs to be
completed before Virginia Tech can issue your firm a Purchase Order or contract. If your firm conducts business from multiple geographic locations, please register these locations in your initial registration.

For registration and technical assistance, reference the eVA website at: http://www.eva.virginia.gov, or call 866-289-7367 or 804-371-2525.

V. STATEMENT OF NEEDS:

A. This project scope is repairing specific locations of the existing white-coated-ply membrane barrel roof of Cassell Coliseum located at 675 WASHINGTON STREET SW, Blacksburg, VA, 24061. The bases for the design and proposed repair is included within a feasibility Study brought forth by the Athletic department due to roof age and weather damage of the roof. This Feasibility Study will be attached at the end of this document.

B. Construction Documents:

1. Electronic copies of the construction documents including the plans and the specifications, will be available for inspection and download online at the following website:

   Shortcut link: https://records.facilities.vt.edu/weblink
   Shortcut: CassellRoof
   Password:C@$$3LLroof

2. All prospective contractors that will participate in the pre-proposal work must have a signed copy of the 20-396395 RFP Visitor Confirmation prior to walking the Cassell roof (this can be brought to the pre-proposal walk).

C. Construction requirements:

1. All EPDM and associated repairs called out within this document and attached documents will be inspected by the University Building Official (UBO) and QAO will be provided by owner for this project. UBO stamp permits will be issued to the selected contractor before the repair work begins.

2. All above mentioned work is outlined in the construction documents and specifications provided at the above noted website and dated 9/27/2019. Contractor shall provide all labor, equipment, material, supervision and fall protection, required to perform all work associated with above mentioned construction documents and specifications; and scope of work.

3. Contractor shall meet the schedule outlined in the contract documents. The project start date will be May 18th, 2020. The substantial completion date will July 17th, 2020 (Substantial Completion is the condition when the Owner agrees that the Work, or a specific portion thereof, is sufficiently complete, in accordance with the Contract Documents, so that it can be utilized by the Owner for the purposes for which it was intended). The final project completion date is August 16th, 2020. Contractor shall document any rain/weather delays and submit schedule extensions accordingly. Failure to properly document delays will not warrant schedule extensions.
D. Mandatory Requirement of Submittal of References:

1. Contractor shall have previous experience in the construction of new or the repair of EPDM roofs more than 65,000 SF. Two references from clients on such work shall be a pre-requisite to submitting a proposal.

2. Contractor shall have all proper and mandated licensing and insurance required by both the State of Virginia and Virginia Tech to contract the above repair work stated in this proposal and all related documents.

3. Contractor shall be aware that during the construction/repair of this project Cassell will remain open for sporting events and other gatherings. Contractor is responsible for making the work area safe during for all foot traffic.

4. **Selected Contractor is required to provide a safety life-line.** If selected contractor chooses to use current life-line system it must be re-inspected by the original installer (Safety and Compliance Inc.) at the selected contractor’s expense and at selected contractors own risk. Selected Contractor is to assume all liability associated with currently installed Cassell Roof life-line system. Selected contractor may choose to install a different or additional life-line system for this project; selected contractor will be responsible for all workers and outside inspectors that use the newly installed Cassell Roof life-line.

VI. PROPOSAL PREPARATION AND SUBMISSION:

A. **Specific Requirements**

Proposals should be as thorough and detailed as possible so that Virginia Tech may properly evaluate your capabilities to provide the required goods or services. Offerors are required to submit the following information/items as a complete proposal:

1. Plan and methodology for providing the goods/services as described in Section V. Statement of Needs of the Request for Proposal and the construction documents provided. Provide a detailed proposal that defines all necessary installation requirements. Discuss advantages and how proposed plan and methodology will support the mission of the Virginia Tech Athletics department.

2. Outline a time frame for construction from award of contract to completion of construction. Provide a detailed scope of work that outlines pre-requisites, execution, contractor responsibilities, client responsibilities, project exclusions, and any out of scope services and any pre-coordination information that is required for completion of construction.

3. A written statement to include, but not limited to the expertise, qualifications and experience of the firm and resumes of specific personnel to be assigned to perform the work. Include two (2) references from organizations similar to the Virginia Tech Athletics where you have performed this type of work that is similar in square footage (65,000 sq. ft.).
4. Provide a detailed pricing plan that includes total projected costs, with a breakdown of costs. Note the requirement for a proposal additive within the contract documents. (See construction documents).

5. Participation of Small, Women-owned and Minority-owned Business (SWAM) Business: If your business cannot be classified as SWaM, describe your plan for utilizing SWaM subcontractors if awarded a contract. Describe your ability to provide reporting on SWaM subcontracting spend when requested. If your firm or any business that you plan to subcontract with can be classified as SWaM, but has not been certified by the Virginia Department of Small Business and Supplier Diversity (SBSD), it is expected that the certification process will be initiated no later than the time of the award. If your firm is currently certified, you agree to maintain your certification for the life of the contract. For assistance with SWaM certification, visit the SBSD website at http://www.sbsd.virginia.gov/

The return of the General Information Form and addenda, if any, signed and filled out as required.

B. General Requirements

1. RFP Response: In order to be considered for selection, Offerors shall submit a complete response to this RFP to include;

   a. One (1) original of the entire proposal, including all attachments. Any proprietary information should be clearly marked in accordance with 2.e. below.

   b. One (1) electronic copy in WORD format or searchable PDF (flash drive) of the entire proposal as one document, INCLUDING ALL ATTACHMENTS mailed along with the hard copy above. Any proprietary information should be clearly marked in accordance with 2.e. below.

   c. Should the proposal contain proprietary information, provide one (1) redacted hard copy of the proposal and attachments with proprietary portions removed or blacked out. This copy should be clearly marked “Redacted Copy” on the front cover. The classification of an entire proposal document, line item prices and/or total proposal prices as proprietary or trade secrets is not acceptable. Virginia Tech shall not be responsible for the Contractor’s failure to exclude proprietary information from this redacted copy.

Response shall be submitted to:

Virginia Polytechnic Institute and State University (Virginia Tech)
Procurement Department (MC 0333)
North End Center, Suite 2100
300 Turner Street NW
Blacksburg, Virginia 24061

Reference the Due Date and Hour, and RFP Number in the lower left hand corner of the return envelope or package.

No other distribution of the proposals shall be made by the Offeror.
2. Proposal Preparation:

   a. Proposals shall be signed by an authorized representative of the Offeror. All information requested should be submitted. Failure to submit all information requested may result in Virginia Tech requiring prompt submission of missing information and/or giving a lowered evaluation of the proposal. Proposals which are substantially incomplete or lack key information may be rejected by Virginia Tech at its discretion. Mandatory requirements are those required by law or regulation or are such that they cannot be waived and are not subject to negotiation.

   b. Proposals should be prepared simply and economically providing a straightforward, concise description of capabilities to satisfy the requirements of the RFP. Emphasis should be on completeness and clarity of content.

   c. Proposals should be organized in the order in which the requirements are presented in the RFP. All pages of the proposal should be numbered. Each paragraph in the proposal should reference the paragraph number of the corresponding section of the RFP. It is also helpful to cite the paragraph number, subletter, and repeat the text of the requirement as it appears in the RFP. If a response covers more than one page, the paragraph number and subletter should be repeated at the top of the next page. The proposal should contain a table of contents which cross references the RFP requirements. Information which the offeror desires to present that does not fall within any of the requirements of the RFP should be inserted at an appropriate place or be attached at the end of the proposal and designated as additional material. Proposals that are not organized in this manner risk elimination from consideration if the evaluators are unable to find where the RFP requirements are specifically addressed.

   d. Each copy of the proposal should be bound in a single volume where practical. All documentation submitted with the proposal should be bound in that single volume.

   e. Ownership of all data, material and documentation originated and prepared for Virginia Tech pursuant to the RFP shall belong exclusively to Virginia Tech and be subject to public inspection in accordance with the Virginia Freedom of Information Act. Trade secrets or proprietary information submitted by an Offeror shall not be subject to public disclosure under the Virginia Freedom of Information Act. However, to prevent disclosure the Offeror must invoke the protections of Section 2.2-4342F of the Code of Virginia, in writing, either before or at the time the data or other materials is submitted. The written request must specifically identify the data or other materials to be protected and state the reasons why protection is necessary. The proprietary or trade secret material submitted must be identified by some distinct method such as highlighting or underlining and must indicate only the specific words, figures, or paragraphs that constitute trade secret or proprietary information. The classification of an entire proposal document, line item prices and/or total proposal prices as proprietary or trade secrets is not acceptable and may result in rejection of the proposal.

3. Oral Presentation: Offerors who submit a proposal in response to this RFP may be required to give an oral presentation of their proposal to Virginia Tech. This will provide an opportunity for the Offeror to clarify or elaborate on the proposal but will in no way change the original proposal. Virginia Tech will schedule the time and location of these presentations. Oral presentations are an option of Virginia Tech and may not be conducted. Therefore, proposals should be complete.
VII. SELECTION CRITERIA AND AWARD:

A. Selection Criteria

Proposals will be evaluated by Virginia Tech using the following:

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<tr>
<td>1. Quality of products/services offered and suitability for the intended purposes</td>
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<td>2. Qualifications and experiences of Offeror in providing the goods/services</td>
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<td>3. Specific plans or methodology to be used to provide the Services (Schedule)</td>
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<td>4. Cost (or Price)</td>
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<td>5. Participation of Small, Women-Owned and Minority (SWAM) Business</td>
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B. Award

Selection shall be made of two or more offerors deemed to be fully qualified and best suited among those submitting proposals on the basis of the evaluation factors included in the Request for Proposal, including price, if so stated in the Request for Proposal. Negotiations shall then be conducted with the offerors so selected. Price shall be considered, but need not be the sole determining factor. After negotiations have been conducted with each offeror so selected, Virginia Tech shall select the offeror which, in its opinion, has made the best proposal, and shall award the contract to that offeror. Virginia Tech may cancel this Request for Proposal or reject proposals at any time prior to an award. Should Virginia Tech determine in writing and in its sole discretion that only one offeror has made the best proposal, a contract may be negotiated and awarded to that offeror. The award document will be a contract incorporating by reference all the requirements, terms and conditions of this solicitation and the Contractor’s proposal as negotiated.

Virginia Tech reserves the right to award multiple contracts as a result of this solicitation.

VIII. MANDATORY PRE-PROPOSAL CONFERENCE:

A mandatory pre-proposal conference will be held on February 7, 2020 at 2:00pm in the Sterrett Facilities Complex Classroom. The purpose of this conference is to allow potential Offers an opportunity to present questions and obtain clarification relative to any facet of this Request for Proposal.

Due to the importance of all Offerors having a clear understanding of the scope of the work and requirements for this solicitation, attendance at this conference will be a prerequisite for submitting a proposal. Proposals will only be accepted from those Offerors who are represented at this pre-proposal conference. Attendance at the conference will be evidenced by the signatures on the
attendance roster. If a representative appears on your behalf, the representative must provide a signature and also identify the name of the Offeror.

**ANYONE WHO WISHES TO WALK THE JOB SITE MUST SIGN THE WAIVER ATTACHED TO THIS REQUEST FOR PROPOSAL.**

Bring a copy of this solicitation with you. Any changes resulting from this conference will be issued in a written addendum to this solicitation. No one will be admitted after 2:05 PM.

It is strongly recommended that you obtain a Virginia Tech parking permit for display on your vehicle prior to attending the conference. Parking permits are available from the Virginia Tech Parking Services Department located at 505 Beamer Way, phone: (540) 231-3200, e-mail: parking@vt.edu.

IX. **INQUIRIES:**

All inquiries concerning this solicitation should be submitted in writing via email, citing the particular RFP section and paragraph number. All inquiries will be answered in the form of an addendum. Inquiries must be submitted by **10:00 AM on February 13, 2020.** Inquiries must be submitted to the procurement officer identified in this solicitation.

X. **INVOICES:**

Invoices for goods or services provided under any contract resulting from this solicitation shall be submitted by email to vтинvoices@vt.edu, the Virginia Tech renovations project manager, or by mail to:

Virginia Polytechnic Institute and State University (Virginia Tech)
Accounts Payable
North End Center, Suite 3300
300 Turner Street NW
Blacksburg, Virginia 24061

XI. **METHOD OF PAYMENT:**

Virginia Tech will authorize payment to the contractor as negotiated in any resulting contract from the aforementioned Request for Proposal.

Payment can be expedited through the use of the Wells One AP Control Payment System. Virginia Tech strongly encourages participation in this program. For more information on this program please refer to Virginia Tech’s Procurement website: [http://www.procurement.vt.edu/vendor/wellsone.html](http://www.procurement.vt.edu/vendor/wellsone.html) or contact the procurement officer identified in the RFP.

XII. **ADDENDUM:**

Any **ADDENDUM** issued for this solicitation may be accessed at [http://www.apps.vpfin.vt.edu/html.docs/bids.php](http://www.apps.vpfin.vt.edu/html.docs/bids.php). Since a paper copy of the addendum will not be mailed to you, we encourage you to check the web site regularly.

XIII. **COMMUNICATIONS:**
Communications regarding this solicitation shall be formal from the date of issue, until either a Contractor has been selected or the Procurement Department rejects all proposals. Formal communications will be directed to the procurement officer listed on this solicitation. Informal communications, including but not limited to request for information, comments or speculations regarding this solicitation to any University employee other than a Procurement Department representative may result in the offending Offeror’s proposal being rejected.

XIV. CONTROLLING VERSION OF SOLICITATION:

The posted version of the solicitation and any addenda issued by Virginia Tech Procurement Services is the mandatory controlling version of the document. Any modification of/or additions to the solicitation by the Offeror shall not modify the official version of the solicitation issued by Virginia Tech Procurement Services. Such modifications or additions to the solicitation by the Offeror may be cause for rejection of the proposal; however, Virginia Tech reserves the right to decide, on a case by case basis, in its sole discretion, whether to reject such a proposal.

XV. TERMS AND CONDITIONS:

This solicitation and any resulting contract/purchase order shall be governed by the attached terms and conditions, see Attachment A.

XVI. CONTRACT ADMINISTRATION:

A. Upon award of this purchase order for this project, Virginia Tech will assign a university provided construction project manager that will oversee all technical and construction related requirements of this project.

B. Reed Nagel, Procurement, shall oversee the contract in its entirety and will serve as the point of contact for issues involving this contract.

XVII. ATTACHMENTS:

Attachment A - Terms and Conditions
Attachment B - Construction Change Order
Attachment C - Feasibility Study
ATTACHMENT A

TERMS AND CONDITIONS

RFP GENERAL TERMS AND CONDITIONS

See: https://www.procurement.vt.edu/content/dam/procurement_vt_edu/docs/terms/Full_GTC_RFP_01182019.pdf

ADDITIONAL TERMS AND CONDITIONS

A. ADDITIONAL GOODS AND SERVICES: The University may acquire other goods or services that the supplier provides other than those specifically solicited. The University reserves the right, subject to mutual agreement, for the Contractor to provide additional goods and/or services under the same pricing, terms and conditions and to make modifications or enhancements to the existing goods and services. Such additional goods and services may include other products, components, accessories, subsystems, or related services newly introduced during the term of the Agreement.

B. AUDIT: The Contractor hereby agrees to retain all books, records, and other documents relative to this contract for five (5) years after final payment, or until audited by the Commonwealth of Virginia, whichever is sooner. Virginia Tech, its authorized agents, and/or the State auditors shall have full access and the right to examine any of said materials during said period.

C. AVAILABILITY OF FUNDS: It is understood and agreed between the parties herein that Virginia Tech shall be bound hereunder only to the extent of the funds available or which may hereafter become available for the purpose of this agreement.

D. CANCELLATION OF CONTRACT: Virginia Tech reserves the right to cancel and terminate any resulting contract, in part or in whole, without penalty, upon 60 days written notice to the Contractor. In the event the initial contract period is for more than 12 months, the resulting contract may be terminated by either party, without penalty, after the initial 12 months of the contract period upon 60 days written notice to the other party. Any contract cancellation notice shall not relieve the Contractor of the obligation to deliver and/or perform on all outstanding orders issued prior to the effective date of cancellation.

E. CONTRACT DOCUMENTS: The contract entered into by the parties shall consist of the Request for Proposal including all modifications thereof, the proposal submitted by the Contractor, the written results of negotiations, the Commonwealth Standard Contract Form, all of which shall be referred to collectively as the Contract Documents.

F. IDENTIFICATION OF BID/PROPOSAL ENVELOPE: The signed bid or proposal should be returned in a separate envelope or package and identified as follows:

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<td>Due Date</td>
<td>Time Due</td>
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|  |  |
| Street or Box No. | Solicitation Number |

|  |  |
| City, State, Zip Code | Solicitation Title |

Name of Procurement Officer: ____________________________
The envelope should be addressed to:

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY (Virginia Tech)
Procurement Department (MC 0333)
North End Center, Suite 2100
300 Turner Street NW
Blacksburg, Virginia 24061

The offeror takes the risk that if the envelope is not marked as described above, it may be inadvertently opened and the information compromised, which may cause the proposal to be disqualified. Bids or Proposals may be hand delivered to the designated location in the office issuing the solicitation. No other correspondence or other bids/proposals should be placed in the envelope.

G. NOTICES: Any notices to be given by either party to the other pursuant to any contract resulting from this solicitation shall be in writing, hand delivered or mailed to the address of the respective party at the following address

If to Contractor: Address Shown On RFP Cover Page
Attention: Name Of Person Signing RFP

If to Virginia Tech:

Virginia Polytechnic Institute and State University (Virginia Tech)
Attn: Reed Nagel
Procurement Department (MC 0333)
North End Center, Suite 2100
300 Turner Street NW
Blacksburg, Virginia 24061

H. SEVERAL LIABILITY: Virginia Tech will be severally liable to the extent of its purchases made against any contract resulting from this solicitation. Applicable entities described herein will be severally liable to the extent of their purchases made against any contract resulting from this solicitation.

I. CLOUD OR WEB HOSTED SOFTWARE SOLUTIONS: For agreements involving Cloud-based Web-hosted software/applications refer to link for additional terms and conditions: http://www.ita.vt.edu/purchasing/VT_Cloud_Data_Protection_Addendum_final03102017.pdf
SPECIAL TERMS AND CONDITIONS

ADVERTISING: In the event a contract is awarded for supplies, equipment, or services resulting from this solicitation, no indication of such sales or services to Virginia Tech will be used in product literature or advertising. The contractor shall not state in any of the advertising or product literature that the Commonwealth of Virginia or any agency or institution of the Commonwealth has purchased or uses its products or services.

AS-BUILT DRAWINGS: The contractor shall provide Virginia Tech a clean set of reproducible “as built” drawings and wiring diagrams, marked to record all changes made during installation or construction. The Contractor shall also provide Virginia Tech with maintenance manuals, parts lists and a copy of all warranties for all equipment. All “as built” drawings and wiring diagrams, maintenance manuals, parts lists and warranties shall be delivered to Virginia Tech upon completion of the work and prior to final payment.

MATERIALS CONTAINING ASBESTOS: The contractor shall not incorporate any materials into the work containing asbestos. The contractor shall not incorporate any material known by the contractor to contain a substance known to be hazardous to health when the building is occupied unless specifically approved by Virginia Tech or required by the specifications. If the contractor becomes aware that a material required by the specifications contains asbestos, it shall notify Virginia Tech immediately and shall take no further steps to acquire or install any such material.

COMPLETE INFORMATION: All offerors/Bidders shall state manufacturer and product offered, and enclose complete and detailed specifications with Proposal/Bid for all products offered. This is required even if quoting on the exact brand name as shown. Failure to do so may cause Proposal/Bid to be considered nonresponsive.

CONTRACTOR/SUBCONTRACTOR LICENSE REQUIREMENT: By my signature on this solicitation, I certify that this firm/individual and/or subcontractor is properly licensed for providing the goods/services specified.

Contractor Name: ____________________________ Subcontractor Name: ____________________________
License #: ____________________________ Type: ____________________________________

ELECTRICAL INSTALLATION: All equipment/material shall conform to the latest issue of all applicable standards as established by National Electrical Manufacturer’s Association (NEMA), American National Standards Institute (ANSI), and Underwriters’ Laboratories, Incorporated (UL) or other Nationally Recognized Testing Laboratories (NRTL) currently listed with the US Department of Labor. All equipment and material, for which there are NEMA, ANSI, UL or other NRTL standards and listings, shall bear the appropriate label of approval for use intended.

EXTRA CHARGES NOT ALLOWED: The Proposal/Bid price shall be for complete installation ready for Virginia Tech use, and shall include all applicable freight and installation charges; extra charges will not be allowed.

FINAL INSPECTION: At the conclusion of the work, the contractor shall demonstrate to the authorized owner’s representatives that the work is fully operational and in compliance with contract specifications and codes. Any deficiencies shall be promptly and permanently corrected by the contractor at the contractor’s sole expense prior to final acceptance of the work.
INSPECTION OF JOB SITE: My signature on this solicitation constitutes certification that I have inspected the job site and am aware of the conditions under which the work must be accomplished. Claims, as a result of failure to inspect the job site, will not be considered by Virginia Tech.

INSTALLATION: All items must be assembled and set in place, ready for use. All crating and other debris must be removed from the premises.

INSURANCE: By signing and submitting a Proposal/Bid under this solicitation, the offeror/bidder certifies that if awarded the contract, it will have the following insurance coverages at the time the work commences. Additionally, it will maintain these during the entire term of the contract and that all insurance coverages will be provided by insurance companies authorized to sell insurance in Virginia by the Virginia State Corporation Commission. During the period of the contract, Virginia Tech reserves the right to require the contractor to furnish certificates of insurance for the coverage required.

INSURANCE COVERAGES AND LIMITS REQUIRED:
A. Worker’s Compensation - Statutory requirements and benefits.
B. Employers Liability - $100,000.00
C. General Liability - $1,000,000.00 combined single limit. Virginia Tech and the Commonwealth of Virginia shall be named as an additional insured with respect to goods/services being procured. This coverage is to include Premises/Operations Liability, Products and Completed Operations Coverage, Independent Contractor’s Liability, Owner’s and Contractor’s Protective Liability and Personal Injury Liability.
D. Automobile Liability - $500,000.00
E. Builders Risk – For all renovation and new construction projects under $100,000 Virginia Tech will provide All Risk – Builders Risk Insurance. For all renovation contracts, and new construction from $100,000 up to $500,000 the contractor will be required to provide All Risk – Builders Risk Insurance in the amount of the contract and name Virginia Tech as additional insured. All insurance verifications of insurance will be through a valid insurance certificate.
F. The contractor agrees to be responsible for, indemnify, defend and hold harmless Virginia Tech, its officers, agents and employees from the payment of all sums of money by reason of any claim against them arising out of any and all occurrences resulting in bodily or mental injury or property damage that may happen to occur in connection with and during the performance of the contract, including but not limited to claims under the Worker’s Compensation Act. The contractor agrees that it will, at all times, after the completion of the work, be responsible for, indemnify, defend and hold harmless Virginia Tech, its officers, agents and employees from all liabilities resulting from bodily or mental injury or property damage directly or indirectly arising out of the performance or nonperformance of the contract.

MAINTENANCE MANUALS: The contractor shall provide with each piece of equipment an operations and maintenance manual with wiring diagrams, parts list, and a copy of all warranties.

ORDERS: Applicable departments, institutions, agencies and Public Bodies of the Commonwealth of Virginia may order by issuing a purchase order against any contract resulting from this solicitation.

PERFORMANCE AND PAYMENT BONDS: The successful Offeror/Bidder may be required deliver to the Virginia Tech Procurement Department executed Commonwealth of Virginia Standard Performance and Labor and Material Payment Bonds, each in the sum of the contract amount, with Virginia Tech as obligee. The surety shall be a surety company or companies approved by the State Corporation Commission to transact business in the Commonwealth of Virginia. No payment shall be due and payable to the contractor, even if the contract has been performed in whole or in part, until the bonds have been delivered to and approved by the Virginia Tech Procurement Department. Standard bond forms will be provided by the Virginia Tech Procurement Department prior to or at the time of award.
PRODUCT INFORMATION: The offeror/bidder shall clearly and specifically identify the product being offered and enclose complete and detailed descriptive literature, catalog cuts and specifications with the Proposal/Bid to enable Virginia Tech to determine if the product offered meets the requirements of the solicitation. Failure to do so may cause the Proposal/Bid to be considered nonresponsive.

PROPOSAL/BID ACCEPTANCE PERIOD: Any Proposal/Bid received in response to this solicitation shall be valid for (90) days. At the end of the (90) days the Proposal/Bid may be withdrawn at the written request of the offeror/bidder. If the Proposal/Bid is not withdrawn at that time it remains in effect until an award is made or the solicitation is cancelled.

SAFETY: The contractor bears sole responsibility for the safety of its employees. The contractor shall take all steps necessary to establish, administer, and enforce safety rules that meet the regulatory requirements of the Virginia Department of Labor and Industry (VDLI) and the Occupational Safety and Health Administration (OSHA). The contractor shall take steps as necessary to protect the safety and health of university employees, students, and visitors during the performance of their work. In addition, the contractor must also provide the university with a written safety program that it intends to follow in pursuing work under this contract. By entering into a contract with Virginia Tech, the contractor and its subcontractors agree to abide by the requirements described in Safety Requirements for Contractors and Subcontractors located on Virginia Tech’s Environmental, Health and Safety Services (EHSS) website at this URL http://www.ehss.vt.edu/programs/contractor_safety.php. A copy of the publication may also be obtained by contacting EHSS at 540/231-5985. No work under this contract will be permitted until the university is assured that the contractor has an adequate safety program in effect.

SUBCONTRACTS: No portion of the work shall be subcontracted without prior written consent of Virginia Tech. In the event that the contractor desires to subcontract some part of the work specified herein, the contractor shall furnish Virginia Tech the names, qualifications and experience of their proposed subcontractors. The contractor shall, however, remain fully liable and responsible for the work to be done by his subcontractor(s) and shall assure compliance with all requirements of the contract.

WORK SITE DAMAGES: Any damage to existing utilities, equipment or finished surfaces resulting from the performance of this contract shall be repaired to the Owner's satisfaction at the contractor's expense.

Building Standards:

All work is to be performed in compliance with the following Virginia Tech Standards:

a) Building Code Compliance requirements including but not limited to references to A/E Seal Requirements, Building Code Related Design Criteria, Codes, Forms, and Guidelines, Procedures & Resources shown on the Virginia Tech website – https://www.facilities.vt.edu/permits-inspections/building-code-compliance.html


c) Network Infrastructure & Services Design and Construction Standards shown on the Virginia Tech website - https://www.nis.vt.edu/About/Publications/CablingStandards.html

GENDER NEUTRAL BATHROOMS
Gender neutral restrooms shall be included in each new capital project and major renovations at Virginia Tech. Whenever possible, every floor shall have one gender neutral restroom that complies with the 2010 ADA Standards for Accessible Design and is accessible to the general public. The gender neutral restroom shall be located nearby the men's and women's multi-user restrooms whenever possible. Appropriate signage shall be displayed for the restroom as well as directional signage if it is not feasible for the restroom to be located near the main floor restrooms. Each gender neutral restroom shall be designed as a single occupancy restroom with appropriate locking and closer mechanisms for the operation of the fully accessible door. The toilet, lavatory and all required accessories shall be compliant with the 2010 ADA Standards for Accessible Design.

VEHICULAR ACCESS AND PARKING AREAS
In addition to the Vehicular Access and Parking Area requirements listed in the 2006 Virginia Tech Design and Construction Standards, include the following:

a) SIDEWALK PARKING: Driving on sidewalks is allowed when there is no other way to get a needed vehicle to a designated place or building on campus. The vehicle operator shall be made aware that extreme caution shall be used to operate the vehicle in a way that will not be a hazard or hindrance to pedestrians using the walk. The contractor shall be responsible for any damage to turf and anything that is located adjacent to the walk. Parking an unattended vehicle on a sidewalk is strictly prohibited by State Law. The contractor is allowed to park a vehicle on a sidewalk if there is no other way to perform necessary work. The procedure to obtain a permit to operate a vehicle on sidewalks is the same as for the turf as outlined in Turf Policy. Any vehicle parked illegally on sidewalks shall be subject to ticketing, fines and towing if necessary.

b) TURF PARKING: Parking or driving on campus turf or sidewalk is strictly prohibited, except as specifically directed or otherwise allowed by the Physical Plant Grounds Department. In this case, a turf permit must be obtained from Virginia Tech Parking Services and displayed by the vehicle. Turf parking is not allowed under the canopy of any tree on campus. Any vehicle parked illegally on turf or sidewalks shall be subject to ticketing and fines.

SCHEDULING SOFTWARE
When required to develop a CPM schedule, the contractor shall use Primavera P6 or a similar system as approved in writing by the University.

CONTRACTOR CHANGE ORDER EVALUATION BY PROJECT A/E
During the construction administration phase of the project, the A/E shall evaluate all Contractor Change Order requests to confirm the entitlement of the change as well as assess the reasonableness of the costs and schedule impacts.

TIME FOR COMPLETION
(a) The Time for Completion shall be designated by the University on the Invitation for Bids, Request for Proposals, or other prebid/proposal documents. In some instances, the Time for Completion may be stated on the Invitation for Bids, Request for Proposals, or other prebid/pre-proposal document in the form of a Contract Completion Date. The Work must be substantially completed by the Time for Completion or the Contract Completion Date. Unless otherwise specified, the Contractor shall achieve Final Completion within thirty (30) days after the date of Substantial Completion.

(b) The Time for Completion shall be stated in the Contract between University and Contractor and shall become a binding part of the Contract upon which the University may rely in planning the use
of the facilities to be constructed and for all other purposes. If the Contractor fails to substantially complete the Work within the Time for Completion or Contract Completion Date, as set forth in the Contract, he shall be subject to payment of actual damages incurred by the University or liquidated damages, if provided for in the Contract.

"ALL RISK" BUILDER'S RISK INSURANCE

(a) Contractor Controlled During Construction: The Contractor, at his cost, shall obtain and maintain in the names of the University and the Contractor "all-risk" builder's risk insurance (or fire, extended coverage, vandalism and malicious mischief insurance, if approved by the University and the Director, Division of Engineering and Buildings) upon the entire structure or structures on which the Work of this Contract is to be done and upon all material in or adjacent thereto which is intended for use thereon, to one hundred percent (100%) of the insurable value thereof (i.e. construction costs, soft costs, FF&E, and the residual value of the existing structure to remain). Such insurance may include a deductible provision if the University so provides in the Supplemental General Conditions, in which case the Contractor will be liable for such deductions, whenever a claim arises. The loss, if any, is to be made adjustable with and payable to the University, in accordance with its interests, as they may appear. The University, its officers, employees and its agents, shall be named as an additional insured in any policy of insurance issued. Written evidence of the insurance shall be filed with the University no later than thirty (30) days following the award of the Contract. In the event of cancellation of this insurance, not less than thirty (30) days prior written notice must be sent to the University. A copy of the policy of insurance shall be given to the University upon demand.

(b) University Controlled During Construction: The University maintains insurance coverage on its buildings. On re-roofing, renovation, and interior modifications of existing building projects where the University continues to occupy the building, or a portion thereof, while the Work is being performed, the Contractor shall provide “all risk” builders risk insurance, as described above, in an amount equal to one hundred percent (100%) of the cost of the Work (i.e. construction costs, soft costs, and FF&E costs). In those instances, the Contract between the University and Contractor for the project shall expressly exclude the project from the requirements of Subsection 12(a). The Contractor is responsible for providing any desired coverage for Contractor's or Subcontractors' buildings, equipment, materials, tools or supplies that are on-site.

(c) The value of the builder's risk insurance shall exclude the costs of excavations, backfills, foundations, underground utilities and sitework. (d) Any insurance provided through the Department of Treasury, Division of Risk Management, on buildings, construction, additions or renovations will not extend to Contractor's nor Subcontractors' buildings, equipment, materials, tools or supplies unless these items are to become property of the University upon completion of the Project and the University has assumed responsibility for such items at the time of the loss.

INSPECTION

(a) All material and workmanship shall be subject to inspection, examination and testing by the University, the Architect/Engineer, the Project Inspector, authorized inspectors and authorized independent testing entities at any and all times during manufacture and/or construction. The Architect/Engineer and the University shall have authority to reject defective material and workmanship and require its correction. Rejected workmanship shall be satisfactorily corrected and rejected material shall be satisfactorily replaced with proper material without charge therefor, and the Contractor shall promptly segregate and remove the rejected material from the Site. If the Contractor fails to proceed at once with replacement of rejected material and/or the correction of defective workmanship, the University may, by contract or otherwise, replace such material and/or correct such workmanship and charge the cost to the Contractor, or may terminate the right of the Contractor to proceed as provided in Section 41 of these General Conditions, the Contractor and surety being liable for any damage to the same extent as provided in Section 41 for termination thereunder.
(b) Site inspections, tests conducted on Site or tests of materials gathered on Site, which the Contract requires to be performed by independent testing entities, shall be contracted and paid for by the University. Examples of such tests are the testing of cast-in-place concrete, foundation materials, soil compaction, pile installations, caisson bearings and steel framing connections. The Contractor shall promptly furnish, without additional charge, all reasonable facilities, labor and materials necessary and convenient for making such tests. Except as provided in (d) below, whenever such examination and testing finds defective materials, equipment or workmanship, the Contractor shall reimburse the University for the cost of reexamination and retesting. Although conducted by independent testing entities, the University will not contract and pay for tests or certifications of materials, manufactured products or assemblies which the Contract, codes, standards, etc., require to be tested and/or certified for compliance with industry standards such as Underwriters Laboratories, Factory Mutual or ASTM. If fees are charged for such tests and certifications, they shall be paid by the Contractor. The Contractor shall also pay for all inspections, tests, and certifications which the Contract specifically requires him to perform and tests which he chooses to perform for his own purposes, but are not required by the Contract.

(c) Where Work is related to or dependent on the Defective Work, the Contractor shall stop such related or dependent Work until the Defective Work or deficiency is corrected or an alternative solution is presented that is satisfactory to the University. Where Work is rejected because of defective material or workmanship, the Contractor shall stop like Work in other areas or locations on the Project until the matter is resolved and the University has approved corrective measures.

(d) Should it be considered necessary or advisable by University or the Architect/Engineer at any time before final acceptance of the entire Work to make an examination of any part of the Work already completed, by removing or tearing out portions of the Work, the Contractor shall on request promptly furnish all necessary facilities, labor and material to expose the Work to be tested to the extent required. If such Work is found to be defective in any respect, due to the fault of the Contractor or his Subcontractors, the Contractor shall bear all the expenses of uncovering the Work, of examination and testing, and of satisfactory reconstruction. If, however, such Work is found to meet the requirements of the Contract, the actual cost of the Contractor's labor and material necessarily involved in uncovering the Work, the cost of examination and testing, and Contractor's cost of material and labor necessary for replacement including a markup of fifteen (15%) percent for overhead and profit shall be paid to the Contractor and he shall, in addition, if completion of the Work has been delayed thereby, be granted a suitable extension of time. Notwithstanding the foregoing, the Contractor shall be responsible for all costs and expenses in removing and replacing the Work if the Contractor had covered the Work prior to any inspection or test contrary to the instructions of the A/E, University or Project Inspector.

(e) The Project Inspector has the authority to recommend to the Architect/Engineer and the University that the Work be suspended when in his judgment the Contract Documents are not being followed. Any such suspension shall be continued only until the matter in question is resolved to the satisfaction of the University. The cost of any such Work stoppage shall be borne by the Contractor unless it is later determined that no fault existed in the Contractor's Work.

(f) The Project Inspector has the right and the authority to
(1) Inspect all construction materials, equipment, and supplies for quality and for compliance with the Contract Documents and/or approved shop drawings and Submittals.
(2) Inspect workmanship for compliance with the standards described in the Contract Documents.
(3) Observe and report on all tests and inspections performed by the Contractor.
(4) Recommend rejection of Work which does not conform to requirements of the Contract Documents.
(5) Keep a record of construction activities, tests, inspections, and reports.
(6) Attend all joint Site construction meetings and inspections held by the University and/or the A/E with the Contractor.

(7) Check materials and equipment, together with documentation related thereto, delivered for conformance with approved Submittals and the Contract.

(8) Check installations for proper workmanship and conformance with shop drawing and installation instructions.

(9) Assist in the review and verification of the Schedule of Values & Certificate for Payment, submitted by the Contractor each month.

(10) Do all things for or on behalf of the University as the University may subsequently direct in writing.

**Progress Delay**

Should any of the following conditions exist, the University may require the Contractor to prepare, at no extra cost to the University, a plan of action and a recovery schedule for completing the Work by the Contract Time for Completion or the Contract Completion Date:

1. The Contractor's monthly project report indicates delays that are, in the opinion of the A/E or the University, of sufficient magnitude that the Contractor's ability to complete the Work by the scheduled Time for Completion or the Contract Completion Date is brought into question;

2. The CPM schedule sorted by early finish shows the Contractor to be thirty (30) or more days behind the critical path schedule at any time during construction up to thirty (30) days prior to scheduled Substantial Completion date;

3. The Contractor desires to make changes in the logic (sequencing of Work) or the planned duration of future activities of the CPM schedule which, in the opinion of the Architect/Engineer or the University, are of a major nature.

The plan of action and recovery schedule, when required, shall explain and display how the Contractor intends to regain compliance with the current accepted, fully completed, Project CPM schedule, as updated by approved change orders.

The plan of action, when required, shall be submitted to the University for review within two (2) business days of the Contractor receiving the University's written demand. The recovery schedule, when required, shall be submitted to the University within five (5) calendar days of the Contractor's receiving the University's written demand.

**Early Completion of Project**

The Contractor may attempt to achieve Substantial Completion on or before the Time for Completion or the Contract Completion Date. However, such planned early completion shall be for the Contractor's convenience only and shall not create any additional rights of the Contractor or obligations of the University under this Contract, nor shall it change the Time for Completion or the Contract Completion Date. The Contractor shall not be required to pay damage to the University because of its failure to achieve Substantial Completion by its planned earlier date. Likewise, the University shall not pay the Contractor any additional compensation for achieving Substantial Completion early nor will the University owe the Contractor any compensation should the University, its officers, employees, or agents cause the Contractor not to achieve Substantial Completion earlier than the date required by the Contract Documents. If the Contractor seeks to change the Time for Completion or the Contract Completion Date to reflect an earlier completion date, he may request or propose such a change. The University may, but is not required to, accept such proposal. However, a change in the Time for Completion or the Contract Completion Date shall be accomplished only by Change Order. If the Contractor's proposal to change the Time for Completion or the Contract Completion Date is accepted, a Change Order will be issued stating
that all references in the Contract, including these General Conditions, to the Time for Completion or the Contract Completion Date shall thereafter refer to the date as modified, and all rights and obligations, including the Contractor's liability for actual damages, delay damages and/or liquidated damages, shall be determined in relation to the date, as modified.

EQUALS
(a) Brand names: Unless otherwise stated in the specifications, the name of a certain brand, make or manufacturer denotes the characteristics, quality, workmanship, economy of operation and suitability for the intended purpose of the article desired, but does not restrict the Contractor to the specific brand, make, or manufacturer; it is set forth to convey to the Contractor the general style, type, character and quality of the article specified.

(b) Equal materials, equipment or assemblies: Whenever in these Contract Documents, a particular brand, make of material, device or equipment is shown or specified, such brand, make of material, device or equipment shall be regarded merely as a standard. Any other brand, make or manufacturer of a product, assembly or equipment which in the opinion of the Architect/Engineer is the equal of that specified, considering quality, capabilities, workmanship, configuration, economy of operation, useful life, compatibility with design of the Work, and suitability for the intended purpose, will be accepted unless rejected by the University as not being equal.

(c) Substitute materials, equipment or assemblies: The Contractor may propose to substitute a material, product, equipment, or assembly which deviates from the requirements of the Contract Documents but which the Contractor deems will perform the same function and have equal capabilities, service life, economy of operations, and suitability for the intended purpose. The proposal must include any cost differentials proposed. The University will have the A/E provide an initial evaluation of such proposed substitutes and provide a recommendation on acceptability and indicate the A/E's redesign fee to incorporate the substitution in the design. If the proposed substitute is acceptable to the University, a Change Order will be proposed to the Contractor to accept the substitute and to deduct the cost of the A/E redesign fee and the proposed cost savings from the Contract Price. The University shall have the right to limit or reject substitutions at its sole discretion.

(d) The Contractor shall be responsible for making all changes in the Work necessary to adapt and accommodate any equal or substitute product which it uses. The necessary changes shall be made at the Contractor's expense.

CONTRACTOR'S TITLE TO MATERIALS
No materials or supplies for the Work shall be purchased by the Contractor, or by any Subcontractor or Supplier, subject to any security interest, installment or sales contract or any other agreement or lien by which an interest is retained by the seller or is given to a secured party. The Contractor warrants that he has clear and good title to all materials and supplies which he uses in the Work or for which he accepts payment in whole or in part.

STANDARDS FOR MATERIALS INSTALLATION & WORKMANSHIP
(a) Unless otherwise specifically provided in the Contract, all equipment, material, and accessories incorporated in the Work are to be new and in first class condition.

(b) Unless specifically approved by the University or required by the Contract, the Contractor shall not incorporate into the Work any materials containing asbestos or any material known by the industry to be hazardous to the health of building construction workers, maintenance workers, or occupants. If the Contractor becomes aware that a material required by the Contract contains asbestos or other hazardous materials, he shall notify the University and the Architect/Engineer immediately and shall take no further steps to acquire or install any such material without first obtaining University approval.
(c) All workmanship shall be of the highest quality found in the building industry in every respect. All items of Work shall be done by craftsmen or tradesmen skilled in the particular task or activity to which they are assigned. In the acceptance or rejection of Work, no allowance will be made for lack of skill on the part of workmen. Poor or inferior workmanship (as determined by the Architect/Engineer, the University or other inspecting authorities) shall be removed and replaced at Contractor's expense such that the Work conforms to the highest quality standards of the trades concerned, or otherwise corrected to the satisfaction of the Architect/Engineer, the University, or other inspecting authority, as applicable.

(d) Under the various sections of the plans or specifications, where specified items are supplied with the manufacturer's printed instructions, recommendations, or directions for installation, or where such instructions, recommendations, or directions are available, installation of the specified items shall be in strict accordance with the manufacturer's printed instructions unless those instructions contradict the plans or specifications, in which case the Architect/Engineer will be notified for an interpretation and decision.

(e) Under the various sections of the plans or specifications, where reference is made to specific codes or standards governing the installation of specified items, installation shall in all cases be in strict accordance with the referenced codes and standards. Where no reference is made to specific codes or standards, installation shall conform to the generally recognized applicable standards for first-class installation of the specific item to be installed. Contractors are expected to be proficient and skilled in their respective trades and knowledgeable of the Codes and Standards of the National Fire Protection Association (NFPA), National Electric Code (NEC), Occupational Safety and Health Act (OSHA) and other codes and standards applicable to installations and associated work by his trade.

(f) Where the manufacturer’s printed instructions are not available for installation of specific items, where specific codes or standards are not referenced to govern the installation or specific items, or where there is uncertainty on the part of the Contractor concerning the installation procedures to be followed or the quality of workmanship to be maintained in the installation of specific items, the Contractor shall consult the Architect/Engineer for approval of the installation procedures or the specific standards governing the quality of workmanship the Contractor proposes to follow or maintain during the installation of the items in question.

(g) During and/or at the completion of installation of any items, the tests designated in the plans or specifications necessary to assure proper and satisfactory functioning for its intended purpose shall be performed by the Contractor or by its Subcontractor responsible for the completed installation. All costs for such testing are to be included in the Contract Price. If required by the Contract Documents, the Contractor shall furnish prior to final inspection the manufacturers' certificates evidencing that products meet or exceed applicable performance, warranty and other requirements, and certificates that products have been properly installed and tested.

**WARRANTY OF MATERIALS AND WORKMANSHIP**

(a) The Contractor warrants that, unless otherwise specified, all materials and equipment incorporated in the Work under the Contract shall be new, in first class condition, and in accordance with the Contract Documents. The Contractor further warrants that all workmanship shall be of the highest quality and in accordance with the Contract Documents and shall be performed by persons qualified at their respective trades.

(b) Work not conforming to these warranties shall be considered defective.

(c) This warranty of materials and workmanship is separate and independent from and in addition to any of the Contractor's other guarantees or obligations in the Contract or under Virginia law.
CHANGES IN THE WORK
(a) The University may at any time, by written order utilizing the Change Order Form found in Attachment (D) of this RFP and without notice to the sureties make changes in the Work which are within the general scope of the Contract, except that no change will be made which will increase the total Contract Price to an amount more than twenty percent (20%) in excess of the original Contract Price without notice to sureties. At the time of the Preconstruction Meeting, the Contractor and the University shall advise each other in writing of their designees authorized to accept and/or approve changes to the Contract Price and of any limits to each designee's authority. Should any designee or limits of authority change during the time this Contract is in effect, the Contractor or University with such a change shall give written notice to the other within seven (7) calendar days, utilizing the procedures set forth in these General Conditions. The Contractor agrees and understands that the authority of the University's designee is limited by Virginia Code §2.2-4309 and any other applicable statute.

In making any change, the charge or credit for the change shall be determined by one of the following methods as selected by the University:

(1) Fixed Price: By a mutually agreed fixed amount change to the Contract Price and/or time allowed for completion of the Work. The Change Order shall be substantiated by documentation itemizing the estimated quantities and costs of all labor, materials, and equipment required as well as any mark-up used. The price change shall include the Contractor's reasonable overhead and profit, including overhead for any unreasonable delay arising from or related to the Change Order and/or the change in the Work. See Subsections (d), (e) and (f), below.

(2) Unit Price: By using unit prices and calculating the number of net units of Work in each part of the Work which is changed, either as the Work progresses or before Work on the change commences, and by then multiplying the calculated number of units by the applicable unit price set forth in the Contract or multiplying by a mutually agreed unit price if none was provided in the Contract. No additional percentage markup for overhead or profit shall be added to the unit prices.

(3) Cost Reimbursement: By ordering the Contractor to perform the changed Work on a cost reimbursement basis by issuing two Change Orders citing this Subsection, an initiating Change Order, authorizing the changed Work, and a confirming Change Order approving the additional cost and time for the changed Work. The initiating Change Order shall: (i) Describe the scope or parameters of the change in the Work; (ii) Describe the cost items to be itemized and verified for payment and the method of measuring the quantity of work performed; (iii) Address the impact on the schedule for Substantial Completion; (iv) Order the Contractor to proceed with the change to the Work; (v) Order the Contractor to keep in a form acceptable to the University, an accurate, itemized account of the actual cost of the change in the Work, including, but not limited to, the actual costs of labor, materials, equipment, and supplies; (vi) Order the Contractor to annotate a copy of the Project schedule to accurately show the status of the Work at the time this first Change Order is issued, to show the start and finish dates of the changed Work, and the status of the Work when the changed Work is completed; and (vii) State that a confirming Change Order will be issued to incorporate the cost of the ordered changed in the Work into the Contract Price and any change in the Contract Time for Completion or Contract Completion Date.

Payments to Contractor
No payment shall be made to the Contractor until:

(1) The Contractor furnishes to the University its Social Security Number (SSN) if an individual, or it's Federal Employer Identification Number (FEIN) if a proprietorship, partnership, corporation or other legal entity.
(2) Certificates of Insurance or other satisfactory evidence of compliance by the Contractor with all the requirements of Special Term and Condition number 7 have been delivered to the University.

(3) Copies of any certificates of insurance required of a Subcontractor under Special Terms and Condition number 7 have been delivered to the University for payments based on Work performed by a Subcontractor.

The Final Payment, which shall include the retainage, less any amounts due to or claimed by the University, shall not become due until the Architect/Engineer and the University agree that Final Completion has been achieved and until the Contractor shall deliver to the University through the Architect/Engineer a Certificate of Completion by the Contractor and an Affidavit of Payment of Claims, stating that all Subcontractors and Suppliers of either labor or materials have been paid all sums claimed by them for Work performed or materials furnished in connection with this Project less retainage. Amounts due the University which may be withheld from the Final Payment may include, but are not limited to, amounts due pursuant to costs incurred to repair or replace Defective Work, costs incurred as a result of the Contractor’s negligent acts or omissions or omissions of those for whom the Contractor is responsible, delay damages and any liquidated or actual damages. If all Subcontractors and Suppliers of labor and materials have not been paid the full amount claimed by them, the Contractor shall list each to which an agreed amount of money is due or which has a claim in dispute. With respect to all such Subcontractors and Suppliers, the Contractor shall provide to the University, along with the Affidavit of Payment of Claims an affidavit from each such Subcontractor and Supplier stating the amount of their subcontract or supply contract, the percentage of completion, the amounts paid to them by the Contractor and the dates of payment, the amount of money still due if any, any interest due the Subcontractor or Supplier pursuant to the Higher Education Manual, and whether satisfactory arrangements have been made for the payment of said amounts. If no agreement can be reached between the Contractor and one or more Subcontractors or Suppliers as to the amounts owed to the Subcontractors or Suppliers, the University may, in its discretion, pay such portion of the moneys due to the Contractor which is claimed by the Subcontractor or Supplier into a Virginia Court or Federal Court sitting in Virginia, in the manner provided by law. Said payment into court shall be deemed a payment to the Contractor. Nothing in this Section shall be construed as creating any obligation or contractual relationship between the University and any Subcontractor or Supplier, and the University shall not be liable to any Subcontractor or Supplier on account of any failure or delay of the University in complying with the terms hereof.

Unless there is a dispute about the compensation due to the Contractor, Defective Work, quality of the Work, compliance with the Contract Documents, completion itself, claims by the University, other matters in contention between the parties, or unless monies are withheld pursuant to the Comptroller's Debt Setoff Program, within thirty (30) days after receipt and acceptance of the Schedule of Values and Certificate for Payment in proper form by the Architect/Engineer at the monthly pay meeting, which shall be considered the receipt date, the University shall pay to the Contractor the amount approved by the Architect/Engineer, less all prior payments and advances whatsoever to or for the account of the Contractor. In the case of Final Payment, the completed Affidavit of Payment of Claims, the Certificate of Completion by the Contractor and the Certificate of Completion by the Architect/Engineer shall accompany the final Schedule of Values and Certificate for Payment which is forwarded to the University for payment. The date on which payment is due shall be referred to as the Payment Date. In the event of disputes, payment shall be mailed on or before the Payment Date for amounts and Work not in dispute, subject to any setoffs claimed by the University; provided, however in instances where further appropriations are required by the General Assembly or where the issuance of further bonds is required, in which case, payment shall be made within thirty (30) days after the effective date of such appropriation or within thirty (30) days after the receipt of bond proceeds by the University. All prior estimates and payments including those relating to extra Work may be corrected and adjusted in any payment and shall be corrected and adjusted in the Final Payment. In the event that any request for payment
by the Contractor contains a defect or impropriety, the University shall notify the Contractor of any defect or impropriety which would prevent payment by the Payment Date, within five (5) days after receipt of the Schedule of Values and Certificate for Payment by the Architect/Engineer.

The acceptance by the Contractor of the Final Payment shall be and operate as a release to the University of all claims by the Contractor, its Subcontractors and Suppliers, and of all liability to the Contractor whatever, including liability for all things done or furnished in connection with this Work, except for things done or furnished which are the subject of unresolved claims for which the Contractor has filed a timely written notice of intent, provided a claim is submitted no later than sixty (60) days after Final Payment. Acceptance of any interest payment by the Contractor shall be a release of the University from claims by the Contractor for late payment.

No certificate for payment issued by the Architect/Engineer, and no payment, final or otherwise, no certificate of completion, nor partial or entire use or occupancy of the Work by the University, shall be an acceptance of any Work or materials not in accordance with the Contract, nor shall the same relieve the Contractor of responsibility for faulty materials or Defective Work or operate to release the Contractor or his Surety from any obligation under the Contract, the Standard Performance Bond and the Standard Labor and Material Payment Bond.

**CONTRACTUAL DISPUTES (§ 2.2-4363, Code of Virginia):**

(a) Contractual claims, whether for money or for other relief, shall be submitted, in writing, no later than sixty (60) days after Final Payment; however, written notice of the Contractor's intention to file such claim must be given within fourteen (14) days of the time of the occurrence or beginning of the Work upon which the claim is based. Such notice shall state that it is a “notice of intent to file a claim” and include a written statement describing the act or omission of the University or its agents that allegedly caused or may cause damage to the Contractor and the nature of the claimed damage. The submission of a timely notice is a prerequisite to recovery under this Section. Failure to submit such notice of intent within the time and in the manner required shall be a conclusive waiver of the claim by the Contractor. Oral notice, the University’s actual knowledge, or a written notice given after the expiration of fourteen (14) days of time of the occurrence or beginning of the Work upon which the claim is based, shall not be sufficient to satisfy the requirements of this Section. Although the Contractor may be required to submit certain classes of claims prior to Final Payment, and the Contractor is not prevented from submitting claims during the pendency of the Work, the University shall not be obligated to render a final written decision on any claim until after Final Payment. All claims shall state that they are “claims” pursuant to this Section, be submitted along with all practically available supporting evidence and documentation and the certification required by Subsection 47(f), and request a final decision. Certificates for payment, applications for payment, vouchers, invoices and similar requests for payment submitted for work done by the Contractor in accordance with the expected contract performance are routine submissions and shall not be considered claims under this Section. Proposed or requested change orders, demands for money compensation or other relief, and correspondence and e-mails to the University or its representatives, which do not strictly comply with the requirements of this Section, shall not be considered claims under this Section.

(b) No written decision denying a claim or addressing issues related to the claim shall be considered a denial pursuant to this Section unless the written decision makes express reference to this Section and is signed by the Agency head or his designee. The Contractor may not institute legal action prior to receipt of the University’s final written decision on the claim unless the Owner fails to render such a decision within ninety (90) days of submission of the claim, at which time the claim shall be deemed denied.

(c) The decision of the agency head or other signatory on the Contract shall be final and conclusive unless the Contractor within six (6) months of the date of the final decision on a claim, initiates legal action as provided in § 2.2-4364 of the Code of Virginia. Failure of the University to render a
decision within 90 days shall not result in the Contractor being awarded the relief claimed nor shall it result in any other relief or penalty. The sole result of the University’s failure to render a decision within 90 days shall be the Contractor’s right to immediately institute legal action. No administrative appeals procedure pursuant to § 2.2-4365 of the Code of Virginia has been established for contractual claims under this Contract.

(d) Pursuant to § 2.2-4366, Alternative Dispute Resolution, of the Code of Virginia, the University may enter into an agreement with the Contractor to submit disputes arising from the performance of this Contract to arbitration and utilize mediation and other alternative dispute resolution procedures. However, such procedures entered into by the University, the Commonwealth, or any department, institution, division, commission, board or bureau thereof, shall be non-binding and subject to § 2.2- 514, as applicable.

(e) In the event that a dispute, claim or controversy between the University and the Contractor arises regarding the requirements of the Contract, the performance of the Work, payment due the Contractor, the terms of any Change Order, or otherwise, the Contractor shall not stop, suspend or delay the Work or any part of the Work to be performed under the Contract, or under any Change Order, or as ordered by the University. The Contractor shall continue to diligently prosecute the Work to completion, including work required in any Change Order or as directed by the University.

(f) Along with a claim submitted under this Section, the Contractor shall submit a Claim Certification certifying that the claim is a true and accurate representation of the claim. Claims submitted without the Claim Certification Form shall not constitute a proper claim and, if not submitted with the certification within the time required, shall be deemed to be waived.

(g) The remedies provided in these General Conditions, including costs, expenses, damages or extensions of time, shall be the Contractor’s sole remedies for the acts, omissions or breaches of the University, which shall survive termination or breach of the Contract.
### ATTACHMENT B

#### CHANGE ORDER REQUEST

**General Contractor:**

**Project:**   

**PO #:**   

**RFP #:**   

**Change Request No.:**   

**Date:**   

---

**Change Request Description:**

---

### SUBCONTRACTOR COSTS

(Please list all subcontractors and their costs involved in this change order request.)

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**Submitted By (Contractor Personnel)**

**Name:**   

**Signature:**   

**Date:**   

---

**Approved By (VT Personnel)**

**Name:**   

**Signature:**   

**Date:**   

---

**Approved by (A/E Firm)**

**Name:**   

**Signature:**   

**Date:**
June 10, 2019

Mr. Rich Stokes
Facilities Renovations Project Manager
Virginia Tech - Facilities Renovations, Athletics
Sterrett Facilities Complex (0129)
Blacksburg, Virginia 24061

ECS Project No. 46:5074


Dear Mr. Stokes:

ECS Mid-Atlantic, LLC (ECS) is pleased to provide the results of the Visual Roof Assessment and Infrared Moisture Survey for the Cassell Coliseum located at Virginia Tech, in Blacksburg, Virginia. ECS' services were provided in general accordance with ECS Proposal No. 46:4065-EPR3.

We are pleased to have this opportunity to provide consulting services for this project. If you have any questions or comments concerning this report, please do not hesitate to contact us.

ECS Mid-Atlantic, LLC

Michael R. Moon, RRC, RRO
Principal Roof Consultant
mmoon@ecslimited.com
540-627-6458

Benjamin Meyer
Principal Architect
bmeyer@ecslimited.com
804-353-6333
EXECUTIVE SUMMARY

ECS mobilized to the site on Monday, May 20, 2019 to begin the survey work, and concluded the survey work on Friday, May 24, 2019. An extensive temporary rope access and lifeline fall protection system was installed by ECS prior to being able to safely access the roof, and was disassembled upon conclusion of the survey work.

The visual survey was performed on Tuesday and Wednesday, May 21-22, 2019. Visual observations were performed, documented, and photographs provided regarding the Roof Structure, Waterproofing Membrane, Insulation, & Substrate Conditions, Roof Drainage Devices, Sheet Metal Fabrications, Rooftop HVAC Equipment, Rooftop Accessories, and Fall Protection. In addition to the visual assessment, an aerial drone infrared moisture survey was performed on the afternoon and evening of Tuesday, May 21, 2019. Roof cores with ECS’ Roofing Contractor on Monday, May 20 and Wednesday, May 22, 2019.

It is ECS’ opinion that the roof is generally in poor condition and a roof replacement or extensive repair project is necessary for the roof to continue to function adequately. ECS’s primary recommendation and the least-risk option for the longevity of the roof structure and performance of the roof system is a full tear-off and replacement project. The alternate options to coat or overlay the existing roof system with a new membrane is also provided; should the Owner be willing to accept certain known and unknown risks. ECS’ opinion of cost for each recommendation, as appropriate, are provided as Rough Order of Magnitude (ROM) estimated costs for budget considerations.
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1.0 INTRODUCTION

1.1 Project Information

Cassell Coliseum on the Blacksburg Campus of Virginia Tech is a 10,052-seat basketball arena. ECS was requested to access, survey, and assess the conditions of the existing main barrel roof system and provide recommendations for repair.

The main barrel roof area is approximately 70,000 square feet of acrylic (non-waterproofing - white color) coating over a 60-mil black Firestone single-ply EPDM membrane, adhered to 1/4-inch thick gypsum roofing board, common-fastened with roofing five-inch long screws through 2.5 inches of polyisocyanurate rigid insulation board, and 5/8-inch thick plywood fastened to two-inch thick Tectum roof deck panels.

1.2 Scope of Services

ECS’ services were provided in general accordance with ECS Proposal No. 46:4065-EPR3 dated March 13, 2019, and authorized by Virginia Tech in Purchase Order No. P3557982 on April 3, 2019.
1.3 Limitations

ECS provides this survey as an instrument of service for the exclusive use of Virginia Tech, its assigns, and ECS. Attempts have been made to verify reported information to the extent possible through ECS observations and experience. It should also be noted that ECS' conclusions and recommendations are limited to the visual observations and building conditions at the time of survey performance. If information provided in this report is contrary to facts known by other readers or field conditions change from the time of this survey, ECS should be notified so that an assessment of this information can be made in the context of this report.

ECS' services have been performed under mutually agreed upon terms and conditions. If other parties wish to rely on this report, please have them contact ECS so that a mutual understanding and agreement of the terms and conditions can be established prior to their use of this information.

ECS' observations of the building was limited to readily accessible areas only. The roof areas include a high number of discreet details, equipment, and conditions; therefore, this report is not representative of each existing detail or material condition, observed or not observed during the survey.

ECS cannot guarantee the repairs associated with this survey performed of the observed membrane breaches and cuts/cores to investigate the roof system conditions due to the coating present was not a suitable substrate at all locations for peel-n-stick membrane repairs; as well as the age of the existing roof system. The temporary repaired areas were cleaned with a weathered membrane cleaner solvent-soaked rag, single-ply primer, and white EPDM flashing tapes. It is recommended that the permanent repairs planned to replace, coat, or overlay the roof system are performed in the near future.

1.4 Documents Provided to ECS

Limited information was available for the subject roofing, including documentation produced by HDH Associates, Inc. (HDH) for the 1996 roof replacement project, proposals, plans and details (drawings), and quality assurance inspection reports. Some of the original drawings produced by Carneal & Johnston Architects & Engineers (original designer) were available, although the copies available were largely illegible, and some older historic documents from previous assessments and proposals were also available to ECS. Much of these documents did not appear to have context within this report. However, the 1996 roof replacement plans produced by HDH provided key information and scaled roof plan and details for context and reference within this report as background location sketches/diagrams.

1.5 Roof History and Overview

According to a review of Virginia Tech's records, it appears that the subject existing roof system is the fourth roof system installed at this roof area over the building's lifespan, including an original Built-up Roof (BUR) (first roof), an overlay BUR membrane (second roof), and another overlay with EPDM membrane (third roof). Based on the documents reviewed, it appears that the first two original Built-Up Roof (BUR) systems (one overlaying the other), with a 60-mil EPDM membrane overlay
(three sandwiched roofs) were torn-off during the 1996 replacement and a quantity of Tectum deck panels at areas were replaced in the process (see HDH Sheet A-1 in the 1996 drawings for existing roof composition prior to the 1996 tear-off and replacement). Sheet S-1 of the 1996 HDH Drawing Set indicates that 8,000 SF of Tectum panels were to be replaced during the 1996 project; specific replacement areas of decking is unknown to ECS.

The roof eaves are roughly 45 feet above surrounding grades, and the peak of the barrel roof is roughly 70 feet above grades. The roof eave length is roughly 262 feet (front to back; i.e. north to south) and the rake width (east to west) of the roof is roughly 241 feet.

Original roof warranty information was not readily available or provided for review and inclusion in this report; however, ECS understands that the current roof system was installed in approximately 1996 with a 20-year warranty. General roof system age was also apparent. ECS does not anticipate that the roof is still under a valid warranty.

Roof history obtained through document review or interviews with knowledgeable staff, if applicable, has been included in ECS' observations, conclusions, and recommendations sections throughout this report.
2.0 SURVEY ACTIVITIES & TIMELINE

ECS mobilized to the site on Monday, May 20, 2019 to begin the survey work, and concluded the survey work on Friday, May 24, 2019.

An extensive temporary rope access and lifeline fall protection system was installed by ECS prior to being able to safely access the roof, and was disassembled upon conclusion of the survey work.

The visual survey was performed on Tuesday and Wednesday, May 21-22, 2019. The aerial drone infrared moisture survey was performed on the afternoon and evening of Tuesday, May 21, 2019. Roof cores with ECS’ Roofing Contractor, were performed on Monday, May 20 and Wednesday, May 22, 2019.

While on-site performing roof cores/cuts and repairs, ECS also repaired apparent and readily accessible damages observed to the membrane, some of which may be causing current reported moisture intrusions. This included roughly 15 punctures and tears due primarily to failed and displaced or ejected roofing fasteners and plates that caused the membrane damage. One such hole approximately two (2) inches in diameter through the membrane was above (seating) Section 4 in the Coliseum corresponded to a significant on-going leak reported to ECS by Virginia Tech staff. However, ECS also found the majority of the other membrane damages in the vicinity of this area in the form of smaller punctures where displaced or ejected fasteners and plates had broken through the EPDM membrane. The roofing assembly was found to be wet around each of the damages observed and generally across this area, which also assisted in concluding the moisture survey findings.

*During review of field notes and photographs for this report, an open lap on the parapet flashing membrane along the southern rake on the west side of the building was identified that was not included in the repairs by ECS. ECS recommends this open lap be repaired in the near future. However, no thermal anomaly was indicated in this area; it appears that runoff mostly flows over this open lap as the membrane is shingle-lapped with the roof slope as opposed to the lap bucking the runoff.
3.0 VISUAL SURVEY OBSERVATIONS

3.1 Roof Structure

The roof structure consists of eight (8) deep glue-lam wood trusses, supporting numerous wood and steel purlins, supporting steel bulb T's and Tectum roof deck panels. Generally, the truss and purlin structural members appeared to be in good condition with the exception of some visible cracking of some areas of the main wood trusses near bearing points.

Vertically-oriented grayish-white staining was evident on the sides of the purlins facing away from the ridge of the barrel roof. The staining appeared to be present on the vast majority of the purlins, emanating from the intersecting joint with the Tectum deck panels on the ridge-facing sides of the purlins.

The Tectum roof deck panels generally appeared to be in good condition; however, stained areas should be investigated further during partial roof replacement of areas recommended due to wind uplift failures - see Section 3.2 for more information and Appendix I for roof areas recommended for full tear-off and replacement prior to further repair waterproofing coating or roof overlay work. Heavily stained Tectum panels were observed in the area of the Seating Section 4 roof leak. Rotated, sagging, or broken Tectum panels were not observed.

Tectum panels in the large northeast wind uplift failure area were also dimpled from the roof fasteners - see Section 3.2 for more information. Panels in wind uplift failure areas should be evaluated for condition during tear-off and replacement of these areas.

As described in Section 4, only certain localized areas (roughly 3%) of the roof appeared to have experienced external moisture intrusions and is considered "wet" and damaged. In addition to direct external leakage, additional potential sources of moisture impacting the roof and structure were identified. When evaluating the staining on the purlins, ECS considered the controlled interior environment and the use of the building as an arena. The building HVAC systems are not capable of cooling nor dehumidifying the space; only heating and ventilation capabilities are provided. The heating capacity (BTUs) and ventilation limits for the HVAC system (Air Changes per Hour (ACH)) were not determined as part of this assessment.

It may be possible that during periods of high building occupancy during the colder months of the year, the warm moisture-laden air generated by the high building occupancy can infiltrate the roof system. Air movement from the building’s positive pressurization was confirmed to be able to move through the roof system. Basketball games cause high building occupancy and typically occur during the colder months of the year. Without a vapor barrier on the roof deck or appropriately located within the roof assembly, moisture-laden air can enter and exit the roof system. The moisture drive through air leakage and vapor diffusion through the roof system can lead to condensation within the roofing assembly.

It is theorized that the moisture accumulation may be sufficient to collect and drain from the roof system through the joints in the Tectum panels. This movement of moisture may also be carrying dissolved cementitious material from the Tectum and depositing the solution material on the purlins (gray-white staining).
If moisture is accumulating within the roof system, there is additional risk for widespread material deterioration, mold, and corrosion of metal fasteners and components. Two suspect samples of mold contamination on gypsum board and polysiocyanurate insulation board facers were obtained from the roof core samples in the largest northwest wet area and sent to EHS Laboratories in Richmond, Virginia for analysis. The analysis results were negative for the presence of mold spores, see results in Appendix II. Although the results were negative for these two samples, the samples represented only a very small fraction of the roof and cannot be considered representative. ECS offers recommendations in Section 6 below for reducing or mitigating these risks.

Photographs

Purlin Staining 1; below southwestern roof quadrant; no apparent moisture in roof system cuts/cores or damages in this area

Purlin Staining 2; below northeastern roof quadrant; no apparent moisture in roof system cuts/cores or damages in this area

Area of significant leak entry above Seating Section 4; stained Tectum panels and purlins
3.2 Waterproofing Membrane, Insulation, & Substrate Conditions

The roof membrane is black EPDM coated with a white acrylic roof coating that does not appear to have provided waterproofing benefit, only color and UV protection to the roof membrane surface. The acrylic coating was observed in poor condition including: staining from sediment, thin application or weathered areas, and areas where it was flaking and the EPDM was bare.

The membrane generally appeared to be in good condition with the exception of a few areas of past wind uplift failure and areas of membrane bridging along the rakes. Two small strips of apparent wind failure approximately 30 feet long each, were observed along the northern and southern rakes on the east side (see roof plan wind failure diagram below). Each of these areas were evidenced by strips of batten bars and additional fastening that was stripped-in (patched) over the roof membrane. It appears that this type of "narrow" repair method was chosen at these locations to avoid a larger more conspicuous (less aesthetic) repair and patch or multiple-patch area to add more appropriate fasteners and plates. Several of the batten bar fasteners were loose and had punctured the membrane repair patching at the southeastern roof area location. Trapped moisture in this area was apparent both during repair and as could be seen in the infrared thermographs as a thermal anomaly, see Section 4 below. Due to the loosening of fasteners in these areas, it is advised that some of the plywood and Tectum deck panels in these areas may be compromised and may require replacement.

The third area of apparent wind failure was significant and involved an area approximately 60 feet wide (from the north rake edge), and from the eave to the ridge at the northwest area of the roof - see roof plan wind failure diagram in Appendix I. In this larger area of wind failure, the gypsum coverboard was found to be fractured/shattered around many (vast majority) of the fasteners, and many fasteners loosened their grip on the plywood and Tectum, allowing fastener and plate displacement and membrane punctures. In addition, several fasteners were found to have been completely ejected through the membrane. The subsequent moisture intrusions caused significant additional moisture damage to the gypsum coverboard, and wetted a large area of the roof substrates. The largest area of moisture was found around and below the large two-inch diameter hole in the membrane from an apparent displaced and potentially ejected fastener and plate (neither fastener nor plate were found at this location). This large hole was also believed to be the primary source of a significant on-going leak over Seating Section 4 inside the arena. This area clearly showed as a large thermal anomaly during the infrared survey. The thermal anomaly showing the moisture in this area was approximately 1/3 the size of the wind uplift failure area. However, portions of the wind uplift failure area were also visible in other thermographs (an example is in the photographs below).

The building HVAC systems appear to place the building under positive pressure. The positive pressurization was noted when opening exterior doors, and from air movement exiting holes in the roof membrane. Hot moist air could be felt exiting the large membrane hole near the top of the large wind uplift failure area. The hygrometer was inserted into the hole and measured 94.3% Relative Humidity at 80.9°F of the air coming out of the hole.

The five-inch roof fastener lengths put the tip of the fasteners just about at the bottom of the Tectum panels, but were not visible from underneath, with the exception of dimples noted above Seating
Section 4. The dimples seemed to only be apparent in the large area of wind failure (above Seating Section 4). The dimples may be the result of the wind uplift failure as it appeared that during the uplift failure (or in subsequent high wind events since the original event), the roof system may have cyclically lifted and fell, slamming back into the structure, potentially driving the fasteners further into the Tectum creating the dimples visible from inside the arena.

Due to the evidence of uplift failure and subsequent moisture intrusions, it is advised that many Tectum panels in this area may require replacement after further evaluation during repairs.

Bridging (unadhered) base flashing was noted at areas along the rakes. One area was associated with an open flashing lap that was subsequently left unrepaid by ECS during cuts/cores and repairs.

Generally, the remainder of the roof areas appeared to be sound. Loose/withdrawed fasteners were not apparent outside of the identified wind uplift failed areas. Substrates walked over underfoot generally seemed to be firm and supportive. As noted in Section 4 below, cuts and moisture meter test results performed outside of the large wind failure area indicated dry materials and well-adhered membrane to the gypsum coverboard.

The photographs below are only representative of the conditions observed and cuts performed, not all conditions and cuts are documented below. Cuts were concentrated in the large area of wind failure in order to confirm assumptions about the cause of the failed conditions. Each cut performed and membrane breach observed was subsequently repaired (with the exception of the open lap in the gutter on the east side under the counterflashing, and the open lap on the south rake, west side).

Photographs

![Typical roof membrane conditions](image1)

![Southwest area of wind failure, view at ridge](image2)
Northeast area of isolated wind failure, repaired with batten bar and cover patch; no further failure (backing out fasteners) observed in this area

Southeast area of isolated wind failure, fasteners backing out (failed)

Membrane puncture from failed supplemental roof fastener and batten bar at southeast isolated wind failure area

Repairs to membrane punctures from fastener failures at the southeast isolated wind failure area
Typical bridging (unadhered) base flashing along the rakes; note the open lap (unrepaired during survey)

Thermograph indicating signature of portion of the large NW area of wind uplift failure

Displaced fastener plate stressing the membrane in the large wind failure area (southwest area)

Conditions observed upon cutting area shown in previous photo; displaced fastener and plate and fractured gypsum board
Another displaced fastener plate stressing the membrane in the large wind failure area (southwest area)

Displaced roofing fastener from wind failure event puncturing membrane and upside-down (found to be still engaged with its plate)

Significant membrane hole caused by displaced fastener plate from wind failure (causing part of the leaks over seating Section 4)

94.3% RH at 80.9F air moving out of the roof system due to building pressurization

Wet and deteriorated gypsum board at random cut below large hole in the large wind failure area

Fractured and displaced gypsum board from wind failure event stressing membrane
View of fractured gypsum after cutting open; although no puncture that was visible, area registered 14.4% WME moisture on meter

Failed roofing fasteners near the eave gutter in the large southwestern wind failure area

Fastener ejected through membrane in area of large wind failure

Fastener ejected from roof membrane above in the large wind failure area

Location of ejected fastener, plate still adhered to membrane, gypsum board fractured

56.6% WME moisture meter reading in gypsum at ejected fastener location
Cut at random irregularity in surface of membrane in large failure area, fractured gypsum board, fastener still engaged

16.7% WME moisture meter reading at random test cut in large wind failure area (no membrane breach), note multiple fastener holes from cyclic motion of roof lifting up and slamming back down onto structure

Random test cut in large wind failure area, wet and deteriorated gypsum board

Fractured gypsum board at ejected fastener

Fastener ejected from membrane in large area of wind failure

Random cut in large wind failure area, polyisocyanurate insulation physically wet (suspect mold sample 2)
23.8% WME moisture meter reading at location of previous photograph

Test cut at a "soft" area in the large wind failure area, appears location of displaced fastener and plate (not found)

21.5% WME moisture meter reading at area of previous photograph (no visible membrane breach)

Fastener dimples visible at the underside of the Tectum panels above Seating Section 4 (area of large wind uplift failure)

Heavily stained Tectum panels in the area where the significant on-going leak entered the building above Seating Section 4 of the arena; note the visible fastener dimples as well
3.2.1 Roof Drainage Devices

Roof slope was observed to direct runoff down to the eaves on the east and west sides of the roof to built-in membrane-lined gutters and through internal drains. Generally, the drainage design appeared to be functionally appropriate with the exceptions of the small drainage crickets that do not provide sufficient positive drainage to the drains at all locations within the gutter areas; and the low parapet and counterflashing/coping heights that appear to allow water to back-up and migrate under the roof membrane through exposed fastener holes.

Small crickets of tapered insulation and gypsum coverboard were observed over the concrete overhang forming the gutters. It was also noted that "haunches" are built against the north and south rakes (see HDH Detail 3 on Sheet A-2 of the 1996 drawings). The haunches appear designed at preventing and controlling runoff from concentrating against the rake parapets, forcefully impacting the corners of the eave gutters and creating an uncontrolled runoff flume that might otherwise "jump" the gutter at higher velocity.

Ponding and slow drainage was evident along both gutters indicating insufficient crickets between drains. The southeastern-most drain was surrounded by sediment several inches thick that was supporting vegetation. The vegetation and root mass was lifted to determine if the roots had breached the membrane, which was not observed.

While walking the gutters, several areas were found to be trapping a significant amount of free water between the membrane and the concrete overhang. Membrane breaches were not typically apparent in these areas with the exception of exposed gasket-headed fasteners through a stainless steel (SS) counterflashing piece that ran up under the SS coping along the parapet edge, forming the gutters. According to HDH Detail 2 on Sheet A-2 of the 1996 drawings, the coping was required to have a continuous concealed cleat with concealed fasteners set in a bed of water cut-off mastic (non-curing butyl), as opposed to the counterflashing and exposed fasteners. Many of the exposed fasteners through the counterflashing below the coping were loose. This condition would create numerous holes in the membrane at low elevations in relation to the gutter elevation, and appear to be the cause of the water that has entered and become trapped under the gutter membrane liner in several locations of both gutters. One location of trapped water under the membrane was associated with a loose membrane lap that ran up under the counterflashing and coping; loose counterflashing fasteners were also observed in this area.

Areas of trapped water under the membrane in the gutters were not cut open to investigate further during this survey, as the amount of trapped water was significant and the repairs under such conditions would have been more difficult than the scope of the current survey.

The membrane lining the gutters was also loose (no longer adhered) in many areas both associated with and without observed trapped water under the membrane.

The gutter downspouts lead under the concrete overhang and are attached to the exterior concrete buttresses and walls, leading to ground-leaders. The pipes are not insulated against freezing; however, pipe bursts and cracks were not apparent during this survey. Insulating the pipes at the exterior without a heat source may also not prevent the pipes from freezing and bursting.

Roof drain bowls appeared to be in good condition with a surficial amount of corrosion. Drain
clamping rings and strainers were corroded and appeared thinning; however, cracked clamping rings was not observed at this time. Drain clamping hardware (bolts and washers) appeared corroded as well.

Photographs

Typical eave gutter and drains (east side); note ponding

Typical eave gutter conditions (south end, west side); note ponding

Typical eave gutter conditions (north end, west side); note ponding and areas of sediment build-up

Typical loose fastener on the SS counterflashing under the coping along the eave gutter parapets
Typical loose fastener on the SS counterflashing under the coping along the eave gutter parapets; loose membrane lap (associated with area of trapped water under the membrane)

Several areas of trapped water under membrane in eave gutter (east side)

Typical drain assembly, corroding hardware and clamping ring

Several drain bowls were inspected and appeared to be in good condition with no cracks observed

South end of the west eave gutter, significant ponding and sediment build-up, note established vegetation around the drain
3.2.2 Sheet Metal Fabrications

Generally, the sheet metal fabrications appeared to be in poor condition. The sheet metal fabrications associated with this roof include the parapet coping stainless steel (SS) counterflashing, discussed further in "3.2.1 Roof Drainage" and , and the aluminum coping along the barrel rakes.

HDH Detail 3 on Sheet A-2 of the 1996 drawings indicate that the existing (original) 0.040 aluminum "wall cap" was to be removed and reused. The condition of the aluminum coping appeared to indicate this is the case (it appeared old and reused). The SS counterflashing and coping at the parapet in the eave gutters appeared to be newer. Materially, the aluminum and SS fabrications appeared to be in good condition, and brite SS finishes without corrosion were observed. However, as previously noted the SS counterflashing and coping parapets appear to be too low; the counterflashing and concealed fasteners design was not included in the installed condition.

The aluminum rake coping was broken into many short sections, seemingly to accommodate the curvature of the barrel rakes, and when reused, the attachment of the coping does not appear to match that of Detail 3 on Sheet A-2. The attachment appeared to consist of small cleats at each section of the coping (spaced much further than 12 inches, as indicated in the detail), and the exposed cleat fasteners were typically loose indicating compromised wood nailer substrate. ECS pushed few loose fasteners back into their holes and "soft" wood blocking substrate was indicated. The coping sections are also fastened together with aluminum rivets, many of which were loose, broken, or missing; some were corroded (indicating some are not aluminum or SS). The sections of the coping were dented and crimped from handling, apparently from the removal and reuse operation. The coping joints were capped with joint caps that appeared to be SS, and were gapped due to the imperfections (dents and crimps) and potential mis-alignments of the metal sections. The joint caps no longer appear watertight nor repairable. Rivets connecting the joint caps to the coping were observed to be irregular (some had two per side and some had one), and missing/loose rivets were also observed.
Photographs

Typical eave gutter parapet SS coping and counterflashing

Typical loose counterflashing screw along the eave gutter parapets

Typical reused aluminum rake coping and SS joint covers

Typical view of reused rake coping, loose fasteners and rivets, missing rivets, wide cleat spacing

Typical loose coping joint cleat and fastener

Typical loose rake coping cleat fasteners
3.2.3 Rooftop HVAC Equipment

ECS observed a total of ten (10) rooftop ventilator units situated along the spine of the barrel roof and associated electrical conduit penetrations; no other rooftop equipment or penetrations were observed with the exception of the roof hatch and guardrail (see Section 3.1.4).

Facility Staff reported that the ventilator units have a long history of leaking. The roof membrane, curb flashing, and conduit penetration flashings were inspected for damage, open laps, or other items that might be potential sources of leaks. Only a few screws through the curb flashing were observed that might be a concern; however, the screws appeared somewhat sealed to the membrane by the white acrylic coating, and were situated up under the overhanging units and were not considered cause for the reported leaks at these units.

Two of the units (Nos. 4 & 5) were wrapped with plastic tarp shrouds, for apparent temporary watertightness. The tarps over Unit 4 were in tatters around the base of the unit; the tarp over Unit 5 included a canvas tarpaulin tightly wrapped over the plastic tarps and appeared to still be adequately covering the unit.

Based on observations of the roofing and flashing, and lack of moisture-indicating thermal anomalies in the roof system around these units, and dry conditions found in membrane cuts below the units, it appears that the HVAC unit sheet metal housings are to blame for the reported moisture intrusions. Thermal anomalies around these units were analyzed from multiple angles and elevated vantage points with the drone IR camera, the cause of these anomalies was concluded to be from the hot air exhaust of the ventilator units.

Continuous steel angle rails (welded together) connect each of the ventilator curbs. It is unclear if the angles are a part of the original design or not; based on the quality of installation, they appear to be part of a repair sometime in the past and not original. Two sections of the rails (at the same joint) were observed to have broken welds.

Based on appearance, the units appear to be part of the original 1962 construction of the building.
Photographs

Typical sheet metal housing of the ventilators with many sealant repairs and aged joints that may no longer be sealed watertight

Unit No. 5 shrouded in plastic and a canvas tarpaulin, presumed to prevent moisture intrusions

Former plastic tarpaulin shroud around Unit 4, tattered condition

One of a few random screws penetrating the curbs of the ventilators, not an apparent leak source; flashings and fasteners appeared sealed otherwise

Broken steel angle rails between the units, sections lying on the roof walkpads
3.2.4 Rooftop Accessories

The roof is accessed by a roof hatch in the northeast corner of the building. The hatch was noted to be relocated during the 1996 project, see HDH Sheet S-2 of the 1996 drawings. The roof hatch was aged and the exterior corroding but appeared functional, and could be renovated if desired to not be replaced during roof repairs. Although, the hatch is recommended for replacement.

Although the ladder appears of sufficient capacity and supported by the hatch, it is simply hung to a steel bar and lashed with twine. The ladder attachment allows it to rotate, and its position in the opening may not be OSHA compliant. The ladder should be more firmly secured and confirmed to be OSHA compliant; or replaced with a new design that is OSHA compliant.

Several self-tapping flashing securement screws were projecting through the inside of the roof hatch, creating potential laceration/puncture risk of injury to users. The hatch pistons appeared to be loose and no longer assisting with opening the hatch. The chains used to provide additional hatch blow-off or blow-back resistance were heavily corroded.

Photographs

Drone image capture of the hatch corrosion

Ladder leading to the hatch may not be OSHA compliant
Ladder "hooked" to a steel bar support, and twine used to "affix" ladder to the steel bar support

Hatch interior conditions, two missing cylinders, two remaining cylinders do not provide opening assist

Screw heads exposed through hatch curb creating risk of injury

Screw heads exposed through hatch curb creating risk of injury

Hatch and chains, chains are heavily corroded and aged
3.2.5 Fall Protection

A penetrating mounted guardrail made from what appears to be a livestock gate was located in the eave gutter just below the roof hatch. With the exception of this guardrail, no other existing fall protection measures or devices were observed on the barrel roof area. Parapet heights ranged from approximately 6 inches in the eave gutters to approximately 16 inches along the rakes.

The guardrail does not appear to be OSHA compliant, it is corroded, and has not been load tested and certified for use to the best of ECS’ knowledge.

Photographs

Steel livestock fence/gate used as a guardrail below the roof hatch

Guardrail below the roof hatch, heavily corroded
4.0 ROOF MOISTURE SURVEY

ECS and Licensed Drone Pilot Mr. Brett Smith with Charlotte UAV performed the aerial infrared (IR) moisture survey on Tuesday, May 21, 2019 in general accordance with ASTM C1153. The purpose of the roof moisture survey was to identify areas of the roof system that exhibited unexplainable thermal anomalies indicating areas of moisture intrusion and trapped moisture. The Roof Moisture Survey consisted of two phases. Phase One included performing daytime aerial photography of the subject roof areas and nighttime aerial infrared thermography scanning and thermograph captures on May 21, 2019 to identify thermal anomalies and areas of suspected moisture intrusion. Phase Two included performing cuts and cores of the roofing system to verify the thermal anomalies and suspected moisture intrusion on Wednesday, May 22, 2019.

4.1 Infrared Thermography

Infrared (IR) cameras identify radiant temperatures of the surfaces scanned. Depending on the time of day, orientation of the sun, and duration of solar exposure, the exterior roof surfaces will radiate varying temperatures. After a sufficient period of thermal loading (daytime sunlight) and subsequent sufficient time for the exterior surface thermal load to dissipate, substrate which contains higher moisture will cool at a slower rate than the dry areas. Therefore, wetter areas will radiate higher temperatures for a period after external thermal loading has subsided. Generally, the southern and western exposures receive the longest duration of thermal loading and subsequently exhibit more distinguishable differences in heat radiation. Where shading obstructions such as adjacent building elevations exist, the period of thermal radiation available to the roof surface is shortened. Radiant temperature of the exterior building surfaces can also be impacted by radiant sources and pressures within the building. Thermal reflections can also occur from adjacent objects (trees, buildings, roof top units, people, fences, etc.) and can give false thermal anomalies.

Survey Conditions on May 21, 2019:

a. Air Temperature: 69 - 65°F
b. Wind Speed: 4 - 5 mph from the E/SE
c. Precipitation: None in the previous 24+ hours
d. Relative Humidity: 73%
e. Conditions of Daytime: High of 81°, Clear (morning) to Partly and Mostly Cloudy in the afternoon
f. Conditions During: Clear
g. Sunset Time: 8:27PM - Sun exposure to roof ceased at approximately 7:10PM
h. Survey (Flight) Start Times: 7:35PM; 8:12PM; 8:51PM (similar results each flight)

The non-destructive infrared thermography moisture survey was performed using Aerial Real-Time Imaging in general accordance with ASTM C1153-10(2015). Thermal images were viewed in real-time and captured using a drone with a FLIR Vue Pro R 640 13mm Thermal Imaging Camera attached to a gimbal, relaying images in real-time to a hand-held monitor on the ground. The drone was flown at a height of 50 to 300 feet over the roof areas in a grid pattern to scan the roof for thermal anomalies. Thermographs of each area of the roof, including high-altitude views of the entire roof field of view were monitored and captured.

Thermal anomalies observed around the rooftop ventilator units were analyzed from multiple
vantage points and elevations with the drone. Based on appearance, these thermal anomalies were attributed to the hot exhaust air from the rooftop units during the survey.

The approximate total confirmed wet materials at each roof area are as follows:

- Gutters = <50 SF each or <1% (water trapped under the membrane, IR thermographs showed faint anomalies)
- Southeastern small wind uplift failure area = <100 SF or <1%
- Northwestern large wind uplift failure area = <2,000 SF or 3%

Approximate Total Wet Areas = 2,000 SF or 3% of the total roof area
Representative Infrared Thermographs of Anomalies and High-Altitude Overall Field of View

High-altitude roof thermograph showing the areas of thermal anomalies known to be wet or with trapped water under the membrane in the gutters

Northwest area thermograph showing portion of the large uplift failure area and trapped water under gutter membrane

Area of trapped water under membrane in east gutter

Area of the southeast small area of wind uplift failure and thermal anomaly from moisture entering through fastener punctures
4.2 Cores and Observations

Twelve locations were cut/cored within the northwest large wind uplift failure area, confirming wet materials throughout the area. A total of nine (9) additional random cuts and moisture meter test results were performed at the approximate locations shown on the sketch in Appendix I. The cuts performed outside of the northwest large wind uplift failure area were indicating moisture meter results of typically 0% WME, with no results higher than 7.5% WME which indicates materials that are not “at risk” or wet and damaged outside of the wet areas identified on the Roof Plan Diagram in Appendix I.

The cores confirmed that the roof system is consistent with HDH’s 1996 roof replacement drawings and is a single roof system over the Tectum deck. The plywood at each core location appeared to be sound and dry. The plywood was not cored to investigate the Tectum from above.
5.0 CONCLUSIONS

The following conclusions were drawn from the current survey work:

1. The building lacks cooling and dehumidification capabilities, and the roof system does not have an air barrier or vapor barrier which appears to be presenting a condensation risk within the roof system.
2. Areas of wind uplift failure, wet materials, and loose parapet wall flashing will need to be remediated prior to a coating or overlay repair project.
   - NOTE: Due to the past wind-uplift failures, the coating or membrane overlay manufacturer may not warrant the roof for any wind uplift damage or failure coverage and may only provide a waterproofing warranty against leaks and premature deterioration or failure of their products.
3. The membrane material is generally in good condition; however, the acrylic coating exhibited areas of flaking and chalking that will require cleaning/removal/scarification to sound condition in order for a coating or a fully-adhered membrane overlay to adhere to the coating. The coating or membrane manufacturer should provide supplemental instruction for the preparation of the coating to receive a coating or membrane overlay.
4. Adhesion/attachment of the existing membrane appeared to be sound outside of the areas of wind uplift failures, the gutters, and at the rake parapet base flashing where loose membrane was observed.
5. Water is trapped in areas of the membrane-lined gutters and the gutters are subject to ponding from inadequate crickets between drains.
6. The parapets within the gutters are low and prone to allowing water to infiltrate the roof system at membrane terminations and fastener holes securing the coping metals.
7. The reused aluminum rake coping metals are in poor condition and should not be reused again.
8. The rooftop ventilator curbs and flashing appear to be in good condition; however, the ventilator units are not water-tight and have historically allowed moisture intrusions.
9. The roof hatch and access ladder are in poor condition and does not appear to be OSHA compliant.
10. The steel guardrail below the hatch is in poor condition and does not appear to be OSHA compliant.
11. Without a permanent fall protection system as a means of safe roof access, it is apparent that regular roof inspections and preventative maintenance is not occurring.

In summary, it is ECS’ opinion that the roof is generally in poor condition and a roof replacement or extensive repair project is necessary for the roof to continue to function adequately.
Appendix I: Roof Plan Diagram
- 6.7% WME
- 7.5% WME
- 4.7% WME
- 5.5% WME
- 14.4% WME

- 0% WME = Roof Cut/Core Location
- 0% WME = Wind Uplift Failure Area

Diagram details:
- North Orientation
- WME indicates Wind Mitigation Efficiency
- Markings and labels for specific areas
- Dimensions and annotations for structural elements

Diagram contains various symbols and annotations for structural analysis and requirements.
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= Wet/Trapped Water Area
Appendix II: Mold Sample Analysis Results
Non-Viable Surface/Bulk Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237
Telephone: 800.347.4010

Client: ECS Mid-Atlantic - Roanoke
7670 Enon Drive
Suite 101
Roanoke, VA 24019

Project/Test Address: 675 Washington St SW; Blacksburg, VA

Laboratory Results

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<th>Analyst:</th>
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<tr>
<td>19-05-03667-001</td>
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<td>5/24/2019</td>
<td>Felicia Butler</td>
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<td>Client Sample ID: Bulk 1</td>
<td>Date Collected: 5/22/2019</td>
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</table>

No fungal spores observed

Note:

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<th>Date Analyzed:</th>
<th>Analyst:</th>
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<td>Felicia Butler</td>
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<td>Client Sample ID: Bulk 2</td>
<td>Date Collected: 5/22/2019</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No fungal spores observed

Note:

Quantification Key:
- Numerous: Several spores seen in every field
- Moderate: At least 1 spore seen in 5 fields
- Few: Over 5 spores seen per cover slip, but less than 1 spore seen in 5 fields
- Occasional: 1-5 spores seen per a cover slip

Method: Direct Microscopic Exam

Reviewed By Authorized Signatory: Tasha Eaddy
QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, volume, etc., was provided by the client. The Client is hereby notified that due to the subjective nature of fungal analysis and the growth process of fungal infestation, laboratory samples can and do change over time relative to the originally sampled material. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.
Mold Chain-of-Custody Form
SHIP TO: 7469 Whitepine Rd. Richmond, VA 23237
Phone: (800) 347-4010 FAX: (804) 275-4907
ONLINE CLIENT PORTAL AVAILABLE FOR ANALYSIS RESULTS AT:
www.leadiab.com

Company Name: ECS Mid-Atlantic, LLC
Address: 770 Enon Drive, Suite 101
Phone: 403622000
Testing Address: 75 Washington St. SW

Collection Date: 22
Time Collected: AM / PM

Outside Air Temperature: °F
Indoor Air Temperature: NA °F
Was There any Precipitation (Rain, Sleet, or Snow) 2 Hours or Less Before Taking the Samples? Yes o

TURN AROUND TIME: IF NO TAT IS SPECIFIED, SAMPLE(S) WILL BE PROCESSES AND CHARGED AS 3 DAY TAT.

Sample Type Codes
Air/Non Viable
Bulk = B
Swab = S
WallCheck = W
Bio Tape = T

Spore Trap
Air-0-Cell = AOC
Cyclex D = C
BioSlS = 8
Micro5=MS

Swab Sample
Non-Porous = NP
Semi-Porous = SP
Porous = P

Sample Type
Collection Location
Air Samples
Spore Trap Type
Air Volume (Total Liters)
Surface Type
Area of Mold (In Square Feet - ft²)
Qualitative Particulate Analysis
Comment

Released by: Michael Moon
Received by: Sunoco
c
Signature: Michael Moon
Date/Time: 5/23/19 11:36 A.M.

Signature: Sunoco
Date/Time: 5/23/19 11:36 A.M.