



REQUEST FOR QUALIFICATIONS

PROJECT #V211-24-023

SECOND POSTING

ON-DEMAND TRADES POOL

Project Values up to \$50k

October 16, 2023 &

November 28, 2023

Set-Aside for Small, Woman- and Minority-Owned Business



Virginia Military Institute
Lexington, Virginia 24450-0304

REQUEST FOR QUALIFICATIONS

RFP# V211-24-023

Issue Date: 28 November 2023

Title: On-Demand Trades Pool for Renovation and Repair Services
SET-ASIDE FOR SBSD Certified SWaM VENDORS ONLY - - Limited to Area 103

Questions Due: 13 December 2023 at 2:00 PM EST

Due Date: 20 December 2023 at 2:00 PM EST (accepting electronic responses in eVA, mailed or delivered proposals)

Commodity Code: 91200 – Construction Services, General

Issuing Agency: Virginia Military Institute
Procurement Services
330 Parade Avenue
Smith Hall, Room 314
Lexington, VA 24450

Period of Contract: Date of Award through 31 December 2024, with four (4) optional renewals. VMI will also solicit for new vendors to add to the contract annually during an open enrollment period.

Proposals should be uploaded to eVA for electronic receipt, mailed or hand-delivered to the Issuing Agency shown above.

IDENTIFICATION OF BID ENVELOPE: The signed bid should be returned in a separate envelope or package, sealed and identified as instructed in Section XII, paragraph H. The envelope should be addressed as directed in the heading of this Page of the solicitation. No other correspondence or other bids should be placed in the envelope.

PRE-PROPOSAL CONFERENCE- No pre-proposal conference will be held for this solicitation.

All Inquiries for Information Should Be Directed To: LTC Lynn W. Carmack, VMI Procurement Services at carmacklw@vmi.edu. The Understanding of Requirement Form (Attachment A) must be used for questions concerning specifications or statement of needs.

In Compliance With This Request for Qualifications And To All The Conditions Imposed Therein And Hereby Incorporated By Reference, The Undersigned Offers And Agrees To Furnish The Goods/Services In Accordance With The Attached Signed Proposal Or As Mutually Agreed Upon By Subsequent Negotiation.

Name and Address Of Firm:

Date: _____

By: _____

(Signature In Ink)

Name: _____

(Please Print)

_____ Zip Code: _____

Title: _____

EVA Vendor ID or DUNS number _____

Phone: (____) _____

E-mail: _____

Fax: (____) _____

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.

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I. **PURPOSE:**

The purpose of this Request for Qualifications (RFP) is to solicit sealed proposals to establish contracts through competitive negotiations for a pool of on-demand single trade construction services by Virginia Military Institute, an agency of the Commonwealth of Virginia. General Contractors will not be excluded from this solicitation; however, General Contractors (GC) may check individual trades only if those trades are direct employees of the GC, not sub- contracted. For projects requiring bids for single trades (\$15k - \$50k) GC's may not submit a bid if the use of a sub-contractor is needed to complete the tasking. The purpose of allowing General Contractors to participate in this solicitation is based on the need for such services when multiple disciplines are required on a single project.

II. **CONTRACT PERIOD:**

The term of this contract is from date of award through 31 December 2024, with four (4) optional renewals. The Institute does not guarantee any exact volume of work to the successful firms as future projects subject to this contract's purpose is not quantifiable.

III. **BACKGROUND:**

Virginia Military Institute shall select multiple Trade Contractors to provide construction services on an "as needed" basis for future, yet to be determined construction, renovation, repair and/or improvement projects, which will be identified by the Virginia Military Institute Physical Plant, Construction Office, Institute Planning and Procurement Services.

The desired outcome is to have a pre-qualified group of Virginia Licensed Class A, B, or C contractors, to include single trade construction companies, to submit written bids on an "as needed" basis for specific projects. No single project will exceed \$50,000.00. Projects may include, but are not limited to, roofing, plumbing, painting, mechanical, electrical, carpentry, masonry, concrete, site work or similar interior or exterior building alteration or renovation work.

During the contract period, the contractor will be issued informal solicitations to evaluate and respond with written bids after which the Institute will evaluate the bids and compare them to the Institute's own cost of providing similar construction thus completing a make/buy comparison. The intended purpose of the estimate and design comparison is to ensure that the Institute utilizes the most cost efficient construction services available. Contractors will be guided in submitting bids and project completion schedules from outline specifications as available in accordance with the Commonwealth of Virginia's recognized codes and standards.

For construction/renovation projects valued less than \$15,000 the Institute *may* elect to assign projects to any of the selected contractors.

IV. **SMALL, WOMAN-OWNED AND MINORITY (SWaM) PARTICIPATION**

It is the policy of the Commonwealth of Virginia and Virginia Military Institute to contribute to the establishment, preservation, and strengthening of small businesses and businesses owned by women and minorities and to encourage their participation in State procurement activities. To that end, VMI is fully committed to achieving the standards set forth in the Governor's Executive Order and expects its

partners to support a goal of no less than 42% spend with SWaM certified vendors. Preference will be given during evaluation to those business entities that are current SWaM certified. Information regarding certification can be obtained at www.SBSD.virginia.gov.

This RFP is a set-aside for SWaM-certified vendors.

V. **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 Military Institute, and all 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. Therefore, your firm is required to register as a trading partner within the eVA system in order to participate in this solicitation. No proposals will be accepted from firms not registered in the eVA system.

Registration in the eVA system is accomplished on-line and it is your responsibility to provide the necessary information. Please visit the eVA website portal at <https://eva.virginia.gov/register-now.html>. This process must be completed before Virginia Military Institute can issue a Purchase Order or contract. If your firm conducts business from multiple geographic locations, please include these locations in your initial registration. For registration and technical assistance, reference the eVA website at <https://eva.virginia.gov/get-help-customer-care.html> or call 866-289-7367 or 804-371-2525.

VI. **VASCUPP Expanded Cooperative Language**

CONTRACT PARTICIPATION: Under the authority of the *Code of Virginia* 2.2-4304 it is the intent of this solicitation and resulting contract(s) to allow for cooperative procurement. Accordingly, any public body, public or private health or educational institutions or lead-issuing institution's affiliated corporations may access any resulting contract if authorized by the contractor.

Participation in this cooperative procurement is strictly voluntary. The resulting contract(s) will be extended to the public bodies indicated above to purchase at contract prices in accordance with contract terms. The Contractor shall notify the lead-issuing institution in writing of any such institutions accessing the contract. No modification of this contract or execution of a separate contract is required to participate. The Contractor will provide semi-annual usage reports for all entities accessing the Contract. Participating entities shall place their own orders directly with the Contractor(s) and shall fully and independently administer their use of the contract(s) to include contractual disputes, invoicing and payments without direct administration from the lead-issuing institution. Virginia Military Institute shall not be held liable for any costs or damages incurred by any other participating public body as a result of any authorization by the Contractor to extend the contract. It is understood and agreed that Virginia Military Institute is not responsible for the acts or omissions of any entity and will not be considered in default of the contract no matter the circumstances.

Use of this contract(s) does not preclude any participating entity from using other contracts or competitive processes as the need may be.

VII. **STATEMENT OF NEEDS:**

A. General

The contractor shall supply general construction and repair services consisting of new construction, renovations, repairs and/or improvements to existing facilities and/or grounds. Types of future projects include, but are not limited to, renovations to classrooms, general office areas, research laboratory areas, computer classrooms, barracks, athletic facilities, grounds, utilities, and the miscellaneous types of renovation and repair projects on the Institute's facilities and grounds, including any of its leased properties. The services shall be provided in a competent manner to maintain the quality of educational services, student activities, and business operations performed by the Institute and minimize the interruption of such services. The contractor shall provide services as guided by the Institute's plans and specifications, as available and applicable codes and standards governing construction and repair work applicable in the Commonwealth of Virginia.

B. Price Proposal And Future Awards

Virginia Military Institute will periodically request bids from the pre-qualified contractors for general construction, renovations, repairs, and/or improvements projects. Projects will not exceed \$50k.

Contractors will be requested to submit bids based on the following method:

1. Fixed Price (FP) – Projects estimated to cost between \$15,000 and less than \$50,000:

For projects that are estimated to cost between \$15,000 and less than \$50,000 in total cost, Contractors will be requested to submit competitive bids based on a Fixed Price (FP). This type of bid is the most commonly used when the scope of work is well defined. The Contractor shall include all of its costs necessary to complete the construction project when submitting a Fixed Price. Awards based on Fixed Price are typically made to the contractor based on the lowest bid

price that meets specifications. Contractors are not required to submit a bid for all projects. Invitations for Bid for projects between \$15,000 and less than \$50,000 will be sent only to those Contractors that meet the construction trade requirements of the individual project specifications and as pre-qualified in "Attachment F – Trade Consideration."

2. Fixed Price (FP) – Projects less than \$15,000:

For construction projects valued less than \$15,000 the Institute **may** elect to assign projects to any of the selected contractors. The selected Contractor(s) will be requested to submit a bid based on a Fixed Price (FP).

The Institute reserves the right to complete any project with its own forces/contract or cancel procurement at any time. The Institute also reserves the right to supply to the contractor any materials it deems appropriate when such can be acquired more cost effectively.

The Institute further reserves the right to terminate any on-demand contract if a contractor does not submit a bid on any projects over a one-year period or if a contractor consistently fails to meet established or agreed upon completion dates.

C. Contractor Requirements:

1. The contractor shall be licensed by the Commonwealth of Virginia State Board of Contractors as a Class A, B, or C Contractor.
2. The contractor shall provide high quality construction and repair services equal to or better than industry standards. This includes prompt response to requests for services and completion of projects in a timely fashion once guidelines and timetables are established by the Institute. Work in progress will be inspected periodically by the Institute for adherence to Commonwealth of Virginia recognized codes and quality workmanship.
3. The contractor shall provide construction to meet the needs of the Institute with minimum disruption to the educational, operational and research mission of the Institute. The contractor shall plan their work with the understanding that the established Institute regular work hours vary within the timeframe of 7:00 AM to 5:00 PM, Monday through Friday, except holidays observed by the Institute. Additional work hours may be granted at the sole discretion of the VMI project manager.
4. The contractor shall provide sufficient representation in the Rockbridge County area to adequately meet the Institute's needs. The contractor's representative shall be responsible for working with various Institute departments and shall be required to provide assistance, expedite work, correct deficiencies and handle many other miscellaneous problems that may occur during work-in-progress.
5. The contractor shall provide a competent, well-trained and experienced staff that exhibits professionalism and service excellence. The contractor shall provide on-site supervision of all trades at all times that the work is in progress. This on-site supervision shall be empowered to act on behalf of the contractor.
6. All employees of the contractor and subcontractors shall wear uniforms or other appropriate Institute approved attire at all times to designate their affiliation with the contractor.
7. The contractor shall be required to work under the same conditions as does the Institute's Physical Plant and Construction personnel. This includes adhering to the Commonwealth of Virginia safety codes and standards, and scheduling work around the Institute's special events and holidays.
8. On many projects, documents may be limited. Under these circumstances, the quality of materials and workmanship shall be in conformance with the high quality standards established by the Institute and the total scope of work would be that which can be reasonably implied and inferred from the documents.
9. The contractor shall be required to provide a detailed plan of operation on future projects to demonstrate to the Institute how the contractor plans to accomplish the projects. This

shall include all facets of the project including, but not limited to; personnel to be allocated to the project, inspection review by the Contractor, provisions for warranty and maintenance integrity, a schedule showing steps from start to finish of stages of project work, follow-up work etc. This plan may be compared to the plans of the Institute to make an analysis of the strengths and weakness of each plan enabling the Institute to determine if the Institute will complete the work by utilizing the Institute's resources or seeking the contractor's resources.

10. The contractor's work force and the work force of its subcontractors shall be staffed with licensed journeymen in all trades with demonstrated experience in their respective fields of work.
11. The contractor shall work with the Institute according to construction documents provided to the contractor by the Institute. The contractor shall make site visits and schedule meetings to get clarifications of the scope of work on the projects. The contractor shall provide a bi-monthly status report of all active, pending, and closed projects. This report, at a minimum, shall provide the Institute's assigned project number, descriptive title, current working estimate, start date, estimated/actual completion dates, percent complete, and remark field.
12. All construction furnished in fulfilling any project shall be of the highest quality as measured by the highest standards or grade of the particular trade(s) involved, except where a lower standard or grade is defined in the Institute's contract documents or instructions.
13. In the event that the contractor desires to subcontract some part of their work, the contractor shall furnish the Institute the names, qualifications and experience of its proposed subcontracts before beginning work on any awarded project. This information will assist the Institute in establishing what traces and portions of the work are to be performed under the Work Order. Contractor shall also submit all emergency contact phone/pager/cell phone numbers of the contractor and subcontractor. The contractor shall be responsible for completely supervising and directing the work under the contract and all subcontractors that it may utilize, using its best skill and attention. The Institute reserves the right to reject any subcontractor proposed to complete the work or a portion of the work.

D. Procedure:

1. The contractor shall deliver to the Institute, a written estimate of the cost to complete the project and identify any long lead materials items. The Institute's designated representative will review the contractor's estimate and, if the estimate is acceptable, initiate purchase procedures. Up to 30-days should be allowed for review and internal approval by the Institute. The Institute reserves the right to reject any and all estimates for any given construction project should the Institute deem the pricing not to be fair and reasonable.
2. In preparing estimates, the contractor may choose to rely on personal inspection and/or contact Physical Plant to obtain access to existing building drawings. The Institute will have the right to furnish any or all materials to the contractor for any given project and invoice the

contractor accordingly. It shall remain the contractor's responsibility to field verify all measurements and construction conditions prior to submitting any bid.

3. Upon approval of an estimate by the Institute, a Purchase Order will be issued as authority to proceed with the work. The Purchase Order will incorporate the contractor's pricing and the agreed upon starting and completion dates. The contractor shall undertake no work until a written Purchase Order has been received from Virginia Military Institute. All work shall be completed within the time set forth in the Purchase Order.
4. The contractor shall perform no work that would result in exceeding the dollar limitation of the Purchase Order without first having obtained written approval from the Institute.
5. If project documents are developed for specific projects, the contractor will be given up to five (5) sets of construction documents at no charge. All sets of documents required by the contractor for its use or for use of any of its subcontractors and suppliers or for other use, in excess of the number of sets stated above, will be furnished to the contractor at cost. Construction documents will be issued in full sets only.
6. The Institute seeks to provide high-quality facilities and grounds for its customers. To that end, the Director of Physical Plant or Designee will monitor complaints received from various Institute departments and personnel and will follow-up with the users to assess satisfaction. In addition to other remedies at its disposal and if a contractor consistently fails to provide high quality construction and/or fails to respond promptly and fully to complaints, the Institute may, in its sole discretion, elect not to solicit or accept bids from this contractor for the next on-demand construction project.

E. Use Of Premises:

1. The contractor shall be responsible for repairing or replacing any work damaged by its operations within ten (10) days after notification by the Institute, unless delayed by availability of materials.
2. It is the responsibility of the contractor to report to the Institute, in the original bid, any damage found prior to beginning any work at the site.
3. The contractor shall not operate or disturb the setting of any valves, switches or electrical equipment on the service lines to the building except by proper previous arrangement with and in the presence of an authorized representative of the Institute. The contractor shall give ample advance notice of the need for cut-off or adjustments, which will be scheduled at the convenience of the Institute.
4. All work shall be coordinated and scheduled with the Institute to minimize disruption of operations.
5. Access for work in restricted areas requires a 48-hour minimum notice to the Institute. Work in these areas may require escort.
6. Unless noted otherwise in the project contract documents, existing sanitary facilities, electricity and water may be used by the contractor as directed by the Institute to the extent of available services and that use of such service does not disrupt any event or services that the Institute provides to employees, cadets, and the public.
7. All projects shall be performed in a manner that shall not adversely affect the integrity of a building's structural, mechanical, electrical, fire protection and life safety systems or any

other building systems or utilities that may overload or render useless any portion of the building without first seeking approval by the Institute's representative. Utilities shutdowns must be coordinated in advance. The contractor shall be responsible for coordinating utilities shutdowns with the Institute's designated representative.

8. Where materials and equipment must be stored, and are of value or attractive for theft, the contractor shall provide a secure lockup. The contractor shall enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism. Any theft or vandalism shall be reported to the Virginia Military Institute Police Department for investigation.
9. The contractor shall:
 - a. Perform its work in such a manner as to minimize interruptions or interfere with the operation of any existing activity on the premises or with the work of any contractor.
 - b. Store apparatus, materials, supplies, and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of its work or the work of the Institute.
 - c. Place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work.
 - d. In accordance with applicable codes, provide proper ventilation and dust control so not to endanger building occupants or contract workers.
10. The contractor expressly undertakes, to effect all cutting, filling or patching of its work required to make the same conform to the drawings and specifications, and except with the consent of the Institute, not to cut or otherwise alter the work of any other contractor. The contractor shall not damage or endanger any portion of the work or premises, including existing improvements, unless called for by the contract.
11. The contractor expressly undertakes, either directly or through its subcontractor(s), to clean up daily all refuse, rubbish, scrap materials and debris caused by its operation, to the end that at all times the site of the work shall present a neat, orderly and competent appearance. No such refuse, rubbish, scrap material and debris shall be left within the completed work nor buried on the building site, but shall be removed from the site and properly disposed of in a licensed landfill or otherwise as required by law. The contractor shall present evidence (such as delivered weight tickets) to the Institute as confirmation that all refuse, rubbish, scrap materials and debris are hauled to a recycling site as opposed to disposal via a landfill.
12. The contractor expressly undertakes, either directly or through its subcontractor(s), before final payment, to remove all surplus material, false work, temporary structures, including foundations thereof, plants of any description and debris of every nature resulting from its operations and to put the site in a neat, orderly condition; to thoroughly clean and leave reasonable dust free all finished surfaces including all equipment, piping, etc. on the interior of all buildings included in the contract; and to thoroughly clean all glass installed under the

contract including the removal of all paint and mortar splatters and other defacements. If a contractor fails to clean up at the completion of the work, the Institute may do so and charge for costs thereof to the contractor.

13. During and at completion of the work, the contractor shall prevent site soil erosion, the runoff of silt and/or debris carrying water from the site, and the blowing of debris off the site in accordance with the applicable requirements and standards of the Virginia Erosion and Sediment Control Handbook, latest edition, and of the project documents.

F. Access To And Inspection Of Work:

1. The contractor shall notify the designated Project Manager from the Institute's Physical Plant prior to commencement of work to arrange for all rough-in and final inspections. Any omission or failure on the part of the Project Manager to disapprove or reject inferior or defective work or materials shall not be construed to be a final acceptance of any such work or material. If any defective work or materials are found during inspection the contractor shall remove or repair, at its own expense, such defective work or rejected material and shall rebuild and/or replace same without extra charge within ten (10) days of being notified in writing of disapproval by the Institute. If any such work shall be covered up without approval or consent, it must, if required by the Institute, its representative or other proper authorities, be uncovered for examination at contractor's expense.
2. The Institute, its specified agents, any public authority and their representative shall at all times have access to the work, whenever it is in preparation or progress. The contractor shall provide safe facilities for such access and inspection.

G. Superintendence By Contractor:

1. The contractor shall be responsible for all construction means, methods, sequences and procedures, for coordinating all portions of the work under the contract except where otherwise specified in the contract documents, and for all safety and worker health programs and practices.
2. The contractor shall, at all times, enforce strict discipline and good order among the workers on the project, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him/her or anyone who will not work in harmony with those employed by the contractor, the subcontractors, the Institute or the Institute's separate contractors and their subcontractors.
3. The Institute may require the contractor to remove from the worksite any employee the Institute deems to be incompetent, careless, not working in harmony with others on the site or otherwise objectionable.

H. Warranty Of Materials And Workmanship:

1. The contractor warrants that, unless otherwise specified, all materials and equipment

incorporated in the work under the contract shall be new, free of defects and in accordance with the contract documents for a period of one year. The contractor further warrants that workmanship shall be of the highest quality and in accordance with contract documents and shall be performed by persons qualified and licensed in their respective trades. Work not conforming to these warranties shall be considered defective. This warranty of materials and workmanship is separate and independent from and in addition to any other guarantees in this contract.

2. **Roofing Warranties:**

- a. The contractor shall submit a written guarantee in which it agrees to maintain the entire roof system(s) in a completely water tight condition at no cost to the Institute for two (2) years from date of final acceptance; except the water tightness guarantee shall not be enforced when the contractor can prove water damage was caused by the Institute.
- b. The contractor shall guarantee its materials and workmanship associated with the roofing, flashings, and sheet metal work incidental to the work against defect due to faulty materials or workmanship for a period of two (2) years from the date of completion of such work.
- c. The Institute, from the date of acceptance of the roofing project, will maintain the roof in accordance with the manufacturer's written requirements to avoid damage to the roof surface by any parties under its control working or walking on the roof. The Institute recognizes its responsibility to inspect the roof semi- annually.
- d. The contractor shall furnish, as a minimum, a roofing manufacturer's standard 20-year warranty/guarantee and manufacturer's additional 10-year material warranty. Authorized agents of the contractor and the Institute shall execute the guarantee form.

I. **Protection Of Persons And Property:**

1. The contractor expressly undertakes both directly and through its subcontractors, to take every precaution at all times for the protection of persons and property which may come on the building site or be affected by the contractor's operation in connection with the work.
2. The contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work.
3. The contractor shall continuously maintain adequate protection of all work from damage and shall protect the Institute's property from injury or loss arising in connection with this contract. The contractor shall make good on any such damage, injury or loss, except such as may be directly due to errors in the contract documents or caused by agents or employees of the Institute. The contractor shall adequately protect adjacent property to prevent any damage to it or loss of use and enjoyment by the Institute. The contractor shall provide and maintain all passageways, guard fences, lights and other facilities for protection required by public authority, local conditions, any of the contract documents or erected for the fulfillment of its obligation for the protection of persons and property.
4. Any damage, including damage to finished surfaces, resulting from the performance of the contract shall be repaired to the Institute's satisfaction at the contractor's expense.

J. Standards Of Conduct:

The contractor shall be responsible for controlling employee conduct, for assuring that its employees are not boisterous or rude, and assuring that they are not engaging in any destructive or criminal activity. The contractor is also responsible for insuring that its employees do not disturb papers on desks, or open desk drawers, cabinets or briefcases, or use the Institute phones, and the like, except as authorized. Successful contractors receiving an award from this solicitation will be required to sign VMI's Standards of Conduct policy. See Attachment G.

K. Other Requirements:

1. *Parking Policy:* All contractor vehicles parked on the Institute post must display a parking permit. Contractors shall note that vehicles parked on the Post without a parking pass or permit are subject to ticketing and fines. For overnight parking, the contractor's company owned vehicles may use the parking lot at the Physical Plant. Privately owned vehicles (POV) may park at the location. No overnight (24 hours) parking is allowed on Post. If parking POV's on Post, VMI Police will identify which lot the POV shall park.
2. *Sidewalk Policy:* Sidewalk access to land-locked buildings is only allowed along designated routes. Vehicle pull-offs are designed at land-locked building sites to move parked vehicles off sidewalks (but not onto turf). Parking an unattended vehicle on a sidewalk is strictly prohibited by State Law and shall be subject to fines. 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 sidewalk. The contractor shall be responsible for any damage to the turf and anything that is located adjacent to the sidewalk. Any vehicle parked illegally on a sidewalk shall be subject to ticketing, fines and towing if necessary.
3. *Utilities:* The Institute will provide water and electricity as necessary for the performance of this work. The contractor shall supply all connections to utilities, such as hoses, cords, etc. The contractor may need to provide water and electricity for projects where such utilities are not available.
4. *Asbestos:* The contractor is hired by the Institute to perform work in buildings where asbestos containing materials (ACM) may be located. The contractor will be informed by the Institute Project Manager of the location of suspect and known ACM in the work area(s) to which the contractor is assigned. The contractor shall under no circumstances damage or disturb suspect or known ACM's unless the contractor has been specially retained to perform this work as a part of the contract and is legally qualified to perform this work. The contractor shall provide its employees with asbestos awareness and other training or activities required by 29 CFR 1926.1101 for the safe performance of their work. Prior to commencement of work, the contractor shall submit to the Institute, for review and approval, his written work practices, precautions, procedures, and engineering controls to be used during work that may disturb ACM. Work shall not proceed until the proposed work practices have been approved by the Institute.
5. *Lead:* The contractor is contracted by the Institute to perform work in buildings where lead-containing materials (LCM) such as lead-based paint may be located. Work performed under this contract may impact these lead materials (for example, during building renovations), but does not include lead abatement or de- leading operations. The contractor will be informed

by the Institute project coordinator/manager of the location of suspect and known lead containing materials in the work area(s) to which the contractor is assigned. The contractor shall provide all training and equipment required by 29 CFR 1926.62 for the safe performance of the work. The contractor may not perform de-leading or lead abatement unless the contractor holds a valid Virginia Lead Contractor License and has been specifically retained to perform this work as a part of the contract. Prior to commencement of this work the contractor shall submit to the Institute, for review and approval, all its written work practices, precautions, procedures, and engineering controls to be used during work that may disturb LCM. Work shall not proceed until the proposed work practices have been approved by the Institute.

6. *Duty to Protect Property*: The contractor shall continuously maintain adequate protection of all its work from damage and shall protect all other property from damage, injury, or loss arising in connection with the work. The contractor shall make good any such damage, injury, or loss except such as may be directly the result of errors in the contract documents or such as shall be caused directly by the Institute.
7. *Safety Precautions*: The contractor shall comply with the rules and regulations of Virginia Department of Labor and Industry (VDLI) and the Occupational Safety and Health Administration (OSHA). The contractor alone shall be responsible for the safety, efficiency and adequacy of its plant, appliances, and methods, and for any damage, which may result from their improper construction, maintenance or operation. The contractor shall erect and properly maintain at all times, as required by the conditions and progress of the work, proper safeguards for the protection of workers and the public and shall post danger warnings against any hazards created by the construction operations. The contractor shall designate a responsible member of its organization on the work whose duty shall be the prevention of accidents. In the absence of notice to the contrary, filed with the Institute in writing with copy to VMI Physical Plant, this person shall be the superintendent of the contractor.
8. *Existing Utilities*: The contractor shall verify with the Institute's representative that the location of existing underground utilities in the area of work has been performed. If utilities are to remain in place, the contractor shall provide adequate means of protection during earthwork operations. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult the Institute immediately for directions. The contractor shall cooperate with the Institute and utility companies in keeping respectable services and facilities in operation. The contractor shall be responsible for contacting the Virginia Utility Protection Service BEFORE beginning any work.
9. *Key Control*:
 - a. No person shall knowingly possess an unauthorized key to property owned by the Institute. Physical Plant's Lock Shop is the only authorized vendor for Institute key requests.
 - b. All keys remain the property of the Institute. Keys which are no longer needed must be returned to the Lock Shop.
 - c. Stolen or lost keys must be reported immediately to the VMI Police Department and the Lock Shop.
 - d. The installation, changing or removal of locks shall be performed only by the

contractor or an authorized Lock Shop designate.

- e. Unauthorized locks are prohibited on doors and if found will be removed and discarded. Any damage or repairs necessitated by the removal of unauthorized locks will be the responsibility of the contractor found in violation of this section.
- f. Keys should at no time be left unattended (hanging in a door lock, lying on a desk, etc.).
- g. Each contractor will be responsible for developing and enforcing a key return policy. All contractors must surrender all Institute keys issued to them upon termination or completion of project.
- h. Keys are not to be transferred from their assigned carrier to another without proper documentation.
- i. The contractor shall be responsible for the total cost of keys requested and for work done to re-secure an area whenever a key is lost or stolen.
- j. The contractor shall return any existing hardware removed from a project to the Lock Shop.
- k. No area outside of the project scope will be accessed by the contractor for an individual without the approval of the Institute's Representative designated responsible for the area. Designate will be responsible for verifying authority and identity of the individual requesting access.

VIII. **PROPOSAL PREPARATION AND SUBMISSION:**

A. General Requirements

1. RFP Response: In order to be considered for selection, Offerors must submit a complete response to this RFP. One original and four copies of each proposal must be submitted to:

Virginia Military Institute
Procurement Services
330 Parade Avenue, Smith Hall – Room 314
Lexington, VA 24450

Reference the Opening Date and Hour, and RFP Number in the lower left hand corner of the return envelope or package. The ORIGINAL proposal is to be clearly marked as such on its front cover.

No other distribution of the proposals shall be made by the Offeror.

VMI is accepting electronic responses through the eVA VBO system. Vendors choosing to submit electronically will submit one response document.

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 the Institute 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 the Institute 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 the Institute pursuant to the RFP shall belong exclusively to the Institute 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 the Institute. This will provide an opportunity for the Offeror to clarify or elaborate on the proposal but will in no way change the original proposal. The Institute will schedule the time and location of these presentations. Oral presentations are an option of the Institute and may not be conducted. Therefore, proposals should be complete.

B. Specific Requirements

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

1. Qualifications and Experience:

- a. Provide an organizational chart indicating which individuals or positions would have knowledge of an agreement with the Institute, and the degree to which each person would be responsible to an Institute account, including names of project managers and construction superintendents. Include proof of required trade certifications.
- b. Describe the offerors general experience in providing construction of the nature the Institute seeks.
- c. Provide a list of all the offeror's clients comparable to the Institute's indicating length of contract and the nature of each project. The Institute may contact and/or visit any of these clients.
- d. Provide a list of all clients lost within the last three years which includes: a) a contact name and telephone number, b) length of contract and c) reason for the loss.

2. Plan for providing services:

- a. Provide a complete and detailed description of the offeror's methodology and plan for providing the services described herein.
- b. Describe the offeror's commitment to the Institute in terms of resources, personnel, investment, etc.
- c. Provide a list of the subcontractors the offeror would use to provide subcontracting.
- d. Provide representation that the prices, terms, warranties and benefits specified in the proposal are comparable to or better than the equivalent terms being offered by the offeror to any present customer.
- e. Comment on your willingness to furnish Commonwealth of Virginia Standard Performance and Labor and Material Payment Bonds for some projects when requested by the Institute.

3. Small, Women-owned and Minority-owned Business (SWaM):

This solicitation is SET-ASIDE for certified Small, Woman-owned, and/or Minority-owned businesses. Only those businesses certified by the Virginia Department of Small Business and Supplier Diversity are eligible to respond to this solicitation.

4. References:

Four (4) recent references, either educational or governmental, for whom you have provided the type services described herein. Include the date(s) the services were furnished, the client name, address and the name and phone number of the individual the Institute has your permission to

contact. (See Attachment D)

5. Financial Stability:

Submit a copy of the offeror's most recent financial statements or other evidence of financial stability.

6. Geographic Location:

Provide information regarding the locations of company offices relative to this proposal.

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

IX. **SELECTION CRITERIA AND AWARD:**

A. Selection Criteria

Proposals will be evaluated by Virginia Military Institute using the following:

<u>Criteria Value</u>	<u>Maximum Point Value</u>
1. Qualifications and Experience	35
2. Plan for Providing Services	35
4. References	10
5. Financial Stability	10
6. Geographic Location	<u>10</u>
	Total 100

AWARD TO MULTIPLE OFFERORS: 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 Qualifications, including price, if so stated in the Request for Qualifications. 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, the agency shall select the offerors which, in its opinion, have made the best proposal, and shall award the contract to those offerors. The Commonwealth reserves the right to make multiple awards as a result of this solicitation. The

Commonwealth may cancel this Request for Qualifications or reject proposals at any time prior to an award, and is not required to furnish a statement of the reasons why a particular proposal was not deemed to be the most advantageous (*Code of Virginia*, § 2.2-4359D). Should the Commonwealth determine in writing and in its sole discretion that only one offeror is fully qualified, or that one offeror is clearly more highly qualified than the others under consideration, 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 the solicitation and the contractor's proposal as negotiated.

X. **METHOD OF PAYMENT**

Virginia Military Institute will authorize payment to the contractor after receiving satisfactory service and receipt of the contractor's correct invoice for services rendered.

Invoice documents shall include the contract number and purchase order number. Invoices must correspond with contract prices. Unless specified otherwise in a purchase order change form or a contract modification agreement, invoices shall be sent ELECTRONICALLY to the following address: payables@vmi.edu

Payment shall be made in accordance with the Commonwealth of Virginia's *Prompt Pay Act*.

XI. **GENERAL TERMS AND CONDITIONS**

- A. **PURCHASING MANUAL:** This procurement is subject to the provisions of the Commonwealth of Virginia's Purchasing Manual for Institutions of Higher Education and Their Vendors and any revisions thereto, which are hereby incorporated into this contract in their entirety. A copy of the manual is available for review at the purchasing office. In addition, the manual may be accessed electronically at <https://vascupp.org/hem.pdf> or a copy can be obtained by calling the Procurement Services at (540) 464-7323.
- B. **APPLICABLE LAWS AND COURTS:** This solicitation and any resulting contract shall be governed in all respects by the laws of the Commonwealth of Virginia, without regard to its choice of law provisions, and any litigation with respect thereto shall be brought in the circuit courts of the Commonwealth. The agency and the contractor are encouraged to resolve any issues in controversy arising from the award of the contract or any contractual dispute using Alternative Dispute Resolution (ADR) procedures (*Code of Virginia*, § 2.2-4366). ADR procedures are described in Chapter 9 of the *Vendors Manual*. The contractor shall comply with all applicable federal, state and local laws, rules and regulations.
- C. **ANTI-DISCRIMINATION:** By submitting their (bids/proposals), (bidders/offerors) certify to the Commonwealth that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and § 2.2-4311 of the *Virginia Public Procurement Act (VPPA)*. If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender sexual orientation, gender identity, or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the public body. (*Code of Virginia*, § 2.2-4343.1E).

In every contract over \$10,000 the provisions in 1. and 2. below apply:

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

- a. The contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, sexual orientation, gender identity, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the contractor. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
- b. The contractor, in all solicitations or advertisements for employees placed by or on behalf of the contractor, will state that such contractor is an equal opportunity employer.
- c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
- d. If the contractor employs more than five employees, the contractor shall (i) provide annual training on the contractor's sexual harassment policy to all supervisors and employees providing services in the Commonwealth, except such supervisors or employees that are required to complete sexual harassment training provided by the Department of Human Resource Management, and (ii) post the contractor's sexual harassment policy in (a) a conspicuous public place in each building located in the Commonwealth that the contractor owns or leases for business purposes and (b) the contractor's employee handbook.
- e. The requirements of these provisions 1. and 2. are a material part of the contract. If the Contractor violates one of these provisions, the Commonwealth may terminate the affected part of this contract for breach, or at its option, the whole contract. Violation of one of these provisions may also result in debarment from State contracting regardless of whether the specific contract is terminated.
- f. In accordance with Executive Order 61 (2017), a prohibition on discrimination by the contractor, in its employment practices, subcontracting practices, and delivery of goods or services, on the basis of race, sex, color, national origin, religion, sexual orientation, gender identity, age, political affiliation, disability, or veteran status, is hereby incorporated in this contract.

2. The contractor will include the provisions of 1. above in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

- D. **ETHICS IN PUBLIC CONTRACTING:** By submitting their (bids/proposals), (bidders/offerors) certify that their (bids/proposals) are made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other (bidder/offeror), supplier, manufacturer or subcontractor in connection with their (bid/proposal), and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged

- E. IMMIGRATION REFORM AND CONTROL ACT OF 1986: By entering into a written contract with the Commonwealth of Virginia, the Contractor certifies that the Contractor does not, and shall not during the performance B-2 of the contract for goods and services in the Commonwealth, knowingly employ an unauthorized alien as defined in the federal Immigration Reform and Control Act of 1986.
- F. DEBARMENT STATUS: By participating in this procurement, the vendor certifies that they are not currently debarred by the Commonwealth of Virginia from submitting a response for the type of goods and/or services covered by this solicitation. Vendor further certifies that they are not debarred from filling any order or accepting any resulting order, or that they are an agent of any person or entity that is currently debarred by the Commonwealth of Virginia.

If a vendor is created or used for the purpose of circumventing a debarment decision against another vendor, the non-debarred vendor will be debarred for the same time period as the debarred vendor.

- G. ANTITRUST: By entering into a contract, the contractor conveys, sells, assigns, and transfers to the Commonwealth of Virginia all rights, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular goods or services purchased or acquired by the Commonwealth of Virginia under said contract.
- H. MANDATORY USE OF STATE FORM AND TERMS AND CONDITIONS FOR IFBs AND RFPs

Failure to submit a proposal on the official state form provided for that purpose may be a cause for rejection of the proposal. Modification of or additions to the General Terms and Conditions of the solicitation may be cause for rejection of the proposal; however, the Commonwealth reserves the right to decide, on a case by case basis, in its sole discretion, whether to reject such a proposal.

- I. CLARIFICATION OF TERMS: If any prospective (bidder/offeror) has questions about the specifications or other solicitation documents, the prospective (bidder/offeror) should contact the buyer whose name appears on the face of the solicitation no later than 10 (ten) calendar days before the due date. Any revisions to the solicitation will be made only by addendum issued by the buyer.
- J. PAYMENT:

- 1. To Prime Contractor:

- 1. Invoices for items ordered, delivered and accepted shall be submitted by the contractor directly to the payment address shown on the purchase order/contract. All invoices shall show the state contract number and/or purchase order number; social security number (for individual contractors) or the federal employer identification number (for proprietorships, partnerships, and corporations).
 - 2. Any payment terms requiring payment in less than 30 days will be regarded as requiring payment 30 days after invoice or delivery, whichever occurs last. This shall not affect offers

of discounts for payment in less than 30 days, however.

3. All goods or services provided under this contract or purchase order, that are to be paid for with public funds, shall be billed by the contractor at the contract price, regardless of which public agency is being billed.
4. The following shall be deemed to be the date of payment: the date of postmark in all cases where payment is made by mail, or when offset proceedings have been instituted as authorized under the Virginia Debt Collection Act.
5. Unreasonable Charges. Under certain emergency procurements and for most time and material purchases, final job costs cannot be accurately determined at the time orders are placed. In such cases, contractors should be put on notice that final payment in full is contingent on a determination of reasonableness with respect to all invoiced charges. Charges which appear to be unreasonable will be resolved in accordance with *Code of Virginia*, § 2.2-4363 and -4364. Upon determining that invoiced charges are not reasonable, the Commonwealth shall notify the contractor of defects or improprieties in invoices within fifteen (15) days as required in *Code of Virginia*, § 2.2-4351.,. The provisions of this section do not relieve an agency of its prompt payment obligations with respect to those charges which are not in dispute (*Code of Virginia*, § 2.2-4363).

2. To Subcontractors:

- a. Within seven (7) days of the contractor's receipt of payment from the Commonwealth, a contractor awarded a contract under this solicitation is hereby obligated:
 - (1) To pay the subcontractor(s) for the proportionate share of the payment received for work performed by the subcontractor(s) under the contract; or
 - (2) To notify the agency and the subcontractor(s), in writing, of the contractor's intention to withhold payment and the reason.
 - b. The contractor is obligated to pay the subcontractor(s) interest at the rate of one percent per month (unless otherwise provided under the terms of the contract) on all amounts owed by the contractor that remain unpaid seven (7) days following receipt of payment from the Commonwealth, except for amounts withheld as stated in (2) above. The date of mailing of any payment by U. S. Mail is deemed to be payment to the addressee. These provisions apply to each sub-tier contractor performing under the primary contract. A contractor's obligation to pay an interest charge to a subcontractor may not be construed to be an obligation of the Commonwealth.
3. Each prime contractor who wins an award in which provision of a SWaM procurement plan is a condition to the award, shall deliver to the contracting agency or institution, on or before request for final payment, evidence and certification of compliance (subject only to insubstantial shortfalls and to shortfalls arising from subcontractor default) with the SWaM procurement plan. Final payment under the contract in question may be withheld until such certification is delivered and, if necessary,

confirmed by the agency or institution, or other appropriate penalties may be assessed in lieu of withholding such payment.

4. The Commonwealth of Virginia encourages contractors and subcontractors to accept electronic and credit card payments.
- K. PRECEDENCE OF TERMS: The following General Terms and Conditions *VENDORS MANUAL*, APPLICABLE LAWS AND COURTS, ANTI-DISCRIMINATION, ETHICS IN PUBLIC CONTRACTING, IMMIGRATION REFORM AND CONTROL ACT OF 1986, DEBARMENT STATUS, ANTITRUST, MANDATORY USE OF STATE FORM AND TERMS AND CONDITIONS, CLARIFICATION OF TERMS, PAYMENT shall apply in all instances. In the event there is a conflict between any of the other General Terms and Conditions and any Special Terms and Conditions in this solicitation, the Special Terms and Conditions shall apply.
- L. QUALIFICATIONS OF (BIDDERS/OFFERORS): The Commonwealth may make such reasonable investigations as deemed proper and necessary to determine the ability of the (bidder/offeror) to perform the services/furnish the goods and the (bidder/offeror) shall furnish to the Commonwealth all such information and data for this purpose as may be requested. The Commonwealth reserves the right to inspect (bidder's/offeror's) physical facilities prior to award to satisfy questions regarding the (bidder's/offeror's) capabilities. The Commonwealth further reserves the right to reject any (bid/proposal) if the evidence submitted by, or investigations of, such (bidder/offeror) fails to satisfy the Commonwealth that such (bidder/offeror) is properly qualified to carry out the obligations of the contract and to provide the services and/or furnish the goods contemplated therein.
- M. TESTING AND INSPECTION: The Commonwealth reserves the right to conduct any test/inspection it may deem advisable to assure goods and services conform to the specifications.
- N. ASSIGNMENT OF CONTRACT: A contract shall not be assignable by the contractor in whole or in part without the written consent of the Commonwealth.
- O. CHANGES TO THE CONTRACT: Changes can be made to the contract in any of the following ways:
 1. The parties may agree in writing to modify the scope of the contract. Any additional goods or services to be provided shall be of a sort that is ancillary to the contract goods or services, or within the same broad product or service categories as were included in the contract award. Any increase or decrease in the price of the contract resulting from such modification shall be agreed to by the parties as a part of their written agreement to modify the scope of the contract.
 2. The Purchasing Agency may order changes within the general scope of the contract at any time by written notice to the contractor. Changes within the scope of the contract include, but are not limited to, things such as services to be performed, the method of packing or shipment, and the place of delivery or installation. The contractor shall comply with the notice upon receipt, unless the contractor intends to claim an adjustment to compensation, schedule, or other contractual impact that would be caused by complying with such notice, in which case the contractor shall, in writing, promptly notify the Purchasing Agency of the

adjustment to be sought, and before proceeding to comply with the notice, shall await the Purchasing Agency's written decision affirming, modifying, or revoking the prior written notice. If the Purchasing Agency decides to issue a notice that requires an adjustment to compensation, the contractor shall be compensated for any additional costs incurred as the result of such order and shall give the Purchasing Agency a credit for any savings. Said compensation shall be determined by one of the following methods:

- a. By mutual agreement between the parties in writing; or
 - b. By agreeing upon a unit price or using a unit price set forth in the contract, if the work to be done can be expressed in units, and the contractor accounts for the number of units of work performed, subject to the Purchasing Agency's right to audit the contractor's records and/or to determine the correct number of units independently; or
 - c. By ordering the contractor to proceed with the work and keep a record of all costs incurred and savings realized. A markup for overhead and profit may be allowed if provided by the contract. The same markup shall be used for determining a decrease in price as the result of savings realized. The contractor shall present the Purchasing Agency with all vouchers and records of expenses incurred and savings realized. The Purchasing Agency shall have the right to audit the records of the contractor as it deems necessary to determine costs or savings. Any claim for an adjustment in price under this provision must be asserted by written notice to the Purchasing Agency within thirty (30) days from the date of receipt of the written order from the Purchasing Agency. If the parties fail to agree on an amount of adjustment, the question of an increase or decrease in the contract price or time for performance shall be resolved in accordance with the procedures for resolving disputes provided by the Disputes Clause of this contract or, if there is none, in accordance with the disputes provisions of the Commonwealth of Virginia *Vendors Manual*. Neither the existence of a claim nor a dispute resolution process, litigation or any other provision of this contract shall excuse the contractor from promptly complying with the changes ordered by the Purchasing Agency or with the performance of the contract generally.
- P. **DEFAULT:** In case of failure to deliver goods or services in accordance with the contract terms and conditions, the Commonwealth, after due oral or written notice, may procure them from other sources and hold the contractor responsible for any resulting additional purchase and administrative costs. This remedy shall be in addition to any other remedies which the Commonwealth may have.
- Q. **TAXES:** Sales to the Commonwealth of Virginia are normally exempt from State sales tax. State sales and use tax certificates of exemption, Form ST-12, will be issued upon request. Deliveries against this contract shall usually be free of Federal excise and transportation taxes. The Commonwealth's excise tax exemption registration number is 54-73-0076K.

If sales or deliveries against the contract are not exempt, the contractor shall be responsible for the payment of such taxes unless the tax law specifically imposes the tax upon the buying entity and prohibits the contractor from offering a tax-included price.

- R. **USE OF BRAND NAMES:** Unless otherwise provided in this solicitation, the name of a certain brand, make or manufacturer does not restrict (bidders/offers) to the specific brand, make or

manufacturer named, but conveys the general style, type, character, and quality of the article desired. Any article which the public body, in its sole discretion, determines to be the equivalent of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted. The (bidder/offeror) is responsible to clearly and specifically identify the product being offered and to provide sufficient descriptive literature, catalog cuts and technical detail to enable the Commonwealth to determine if the product offered meets the requirements of the solicitation. This is required even if offering the exact brand, make or manufacturer specified. Normally in competitive sealed bidding only the information furnished with the bid will be considered in the evaluation. Failure to furnish adequate data for evaluation purposes may result in declaring a bid nonresponsive. Unless the (bidder/offeror) clearly indicates in its (bid/proposal) that the product offered is an equivalent product, such (bid/proposal) will be considered to offer the brand name product referenced in the solicitation.

- S. **TRANSPORTATION AND PACKAGING:** By submitting their (bids/proposals), all (bidders/offerors) certify and warrant that the price offered for FOB destination includes only the actual freight rate costs at the lowest and best rate and is based upon the actual weight of the goods to be shipped. Except as otherwise specified herein, standard commercial packaging, packing and shipping containers shall be used. All shipping containers shall be legibly marked or labeled on the outside with purchase order number, commodity description, and quantity.
- T. **INSURANCE:** By signing and submitting a bid or proposal under this solicitation, the bidder or offeror certifies that if awarded the contract, it will have the following insurance coverage at the time the contract is awarded. For construction contracts, if any subcontractors are involved, the subcontractor will have workers' compensation insurance in accordance with §§ 2.2-4332 and 65.2-800 et seq. of the *Code of Virginia*. The bidder or offeror further certifies that the contractor and any subcontractors will maintain these insurance coverage during the entire term of the contract and that all insurance coverage will be provided by insurance companies authorized to sell insurance in Virginia by the Virginia State Corporation Commission.

MINIMUM INSURANCE COVERAGES AND LIMITS REQUIRED FOR MOST CONTRACTS:

- 1. **Workers' Compensation -** Statutory requirements and benefits. Coverage is compulsory for employers of three or more employees, to include the employer. Contractors who fail to notify the Commonwealth of increases in the number of employees that change their workers' compensation requirements under the *Code of Virginia* during the course of the contract shall be in noncompliance with the contract.
- 2. **Employer's Liability -** \$100,000.
- 3. **Commercial General Liability -** \$1,000,000 per occurrence and \$200,000 in the aggregate. Commercial General Liability is to include bodily injury and property damage, personal injury and advertising injury, products and completed operations coverage. The Commonwealth of Virginia must be named as an additional insured and so endorsed on the policy.
- 4. **Automobile Liability -** \$1,000,000 combined single limit. (Required only if a motor vehicle not owned by the Commonwealth is to be used in the contract. Contractor must assure that the

required coverage is maintained by the Contractor (or third party owner of such motor vehicle.))

NOTE: In addition, various Professional Liability/Errors and Omissions coverage is required for the following:

Profession/Service	Limits
Accounting	\$1,000,000 per occurrence, \$3,000,000 aggregate
Architecture	\$2,000,000 per occurrence, \$6,000,000 aggregate
Asbestos Design, Inspection or Abatement Contractors	\$1,000,000 per occurrence, \$3,000,000 aggregate
Health Care Practitioner (to include Dentists, Licensed Dental Hygienists, Optometrists, Registered or Licensed Dental Hygienists, Optometrists, Registered or Licensed Practical Nurses, Pharmacists, Physicians, Podiatrists, Chiropractors, Physical Therapists, Physical Therapist Assistants, Clinical Psychologists, Clinical Social Workers, Professional Counselors, Hospitals, or Health Maintenance Organizations.)	
https://law.lis.virginia.gov/vacode/title8.01/chapter21.1/section8.01-581.15	
Insurance/Risk Management	\$1,000,000 per occurrence, \$3,000,000 aggregate
Landscape Architecture	\$1,000,000 per occurrence, \$1,000,000 aggregate
Legal	\$1,000,000 per occurrence, \$5,000,000 aggregate
Professional Engineer	\$2,000,000 per occurrence, \$6,000,000 aggregate
Surveying	\$1,000,000 per occurrence, \$1,000,000 aggregate

- U. ANNOUNCEMENT OF AWARD: Upon the award or the announcement of the decision to award a contract over \$50,000, as a result of this procurement, Virginia Military Institute will publicly post such notice on the DGS/DPS eVA web site (www.eva.virginia.gov) for a minimum of 10days.

- V. DRUG-FREE WORKPLACE: Applicable for all contracts for \$10,000:

During the performance of this contract, the contractor agrees to (i) provide a drug-free workplace for the contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;

(iii) state in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

For the purposes of this section, “*drug-free workplace*” means a site for the performance of work done in connection with a specific contract awarded to a contractor, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

- W. NONDISCRIMINATION OF CONTRACTORS: A bidder, offeror, or contractor shall not be discriminated against in the solicitation or award of this contract because of race, religion, color, sex, sexual orientation, gender identity, national origin, age, disability, faith-based organizational status, any other basis prohibited
- X. by state law relating to discrimination in employment or because the bidder or offeror employs ex- offenders unless the state agency, department or institution has made a written determination that employing ex-offenders on the specific contract is not in its best interest. If the award of this contract is made to a faith-based organization and an individual, who applies for or receives goods, services, or disbursements provided pursuant to this contract objects to the religious character of the faith-based organization from which the individual receives or would receive the goods, services, or disbursements, the public body shall offer the individual, within a reasonable period of time after the date of his objection, access to equivalent goods, services, or disbursements from an alternative provider.
- Y. eVA BUSINESS-TO-GOVERNMENT VENDOR REGISTRATION, CONTRACTS, AND ORDERS: The eVA Internet electronic procurement solution, web site portal www.eVA.virginia.gov, streamlines and automates government purchasing activities in the Commonwealth. The eVA portal is the gateway for vendors to conduct business with state agencies and public bodies. All vendors desiring to provide goods and/or services to the Commonwealth shall participate in the eVA Internet e- procurement solution by completing the free eVA Vendor Registration. All bidders or offerors must register in eVA and pay the Vendor Transaction Fees specified below; failure to register will result in the bid/proposal being rejected.

Vendor transaction fees are determined by the date the original purchase order is issued and the current fees are as follows:

- a. For orders issued July 1, 2014, and after, the Vendor Transaction Fee is:
 - (i) DSBSD-certified Small Businesses: 1%, capped at \$500 per order.
 - (ii) Businesses that are not DSBSD-certified Small Businesses: 1%, capped at \$1,500 per order.
- b. Refer to Special Term and Condition “eVA Orders and Contracts” to identify the number of purchase orders that will be issued as a result of this solicitation/contract with the eVA transaction fee specified above assessed for each order.

For orders issued prior to July 1, 2014, the vendor transaction fees can be found at www.eVA.virginia.gov.

The specified vendor transaction fee will be invoiced, by the Commonwealth of Virginia

Department of General Services, typically within 30 days of the order issue date. Any adjustments (increases/decreases) will be handled through purchase order changes.

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

AA. **SET-ASIDES IN ACCORDANCE WITH THE SMALL BUSINESS ENHANCEMENT AWRD PRIORITY:**

This solicitation is set-aside for DSBSD-certified micro businesses or small businesses when designated as "Micro Business Set-Aside Priority" or Small Business Set-Aside Priority" accordingly in the solicitation. DSBSD-certified micro businesses or small businesses also includes DSBSD-certified women-owned and minority-owned businesses when they have received the DSBSD small business certification. For purposes of award, bidders/offerors shall be deemed micro businesses or small businesses if and only if they are certified as such by DSBSD on the due date for receipt of bids/proposals.

- AA. **BID PRICE CURRENCY:** Unless stated otherwise in the solicitation, bidders/offerors shall state bid/offer prices in US dollars.

- BB. **AUTHORIZATION TO CONDUCT BUSINESS IN THE COMMONWEALTH:** A contractor organized as a stock or nonstock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall be authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Title 13.1 or Title 50 of the Code of Virginia or as otherwise required by law. Any business entity described above that enters into a contract with a public body pursuant to the Virginia Public Procurement Act shall not allow its existence to lapse or its certificate of authority or registration to transact business in the Commonwealth, if so required under Title 13.1 or Title 50, to be revoked or cancelled at any time during the term of the contract. A public body may void any contract with a business entity if the business entity fails to remain in compliance with the provisions of this section.

- CC. **CIVILITY IN STATE WORKPLACES:** The contractor shall take all reasonable steps to ensure that no individual, while performing work on behalf of the contractor or any subcontractor in connection with this agreement (each, a "Contract Worker"), shall engage in 1) harassment (including sexual harassment), bullying, cyber- bullying, or threatening or violent conduct, or 2) discriminatory behavior on the basis of race, sex, color, national origin, religious belief, sexual orientation, gender identity or expression, age, political affiliation, veteran status, or disability.

The contractor shall provide each Contract Worker with a copy of this Section and will require Contract Workers to participate in agency training on civility in the State workplace if contractor's (and any

subcontractor's) regular mandatory training programs do not already encompass equivalent or greater expectations. Upon request, the contractor shall provide documentation that each Contract Worker has received such training.

For purposes of this Section, "State workplace" includes any location, permanent or temporary,

where a Commonwealth employee performs any work-related duty or is representing his or her agency, as well as surrounding perimeters, parking lots, outside meeting locations, and means of travel to and from these locations. Communications are deemed to occur in a State workplace if the Contract Worker reasonably should know that the phone number, email, or other method of communication is associated with a State workplace or is associated with a person who is a State employee.

The Commonwealth of Virginia may require, at its sole discretion, the removal and replacement of any Contract Worker who the Commonwealth reasonably believes to have violated this Section.

This Section creates obligations solely on the part of the contractor. Employees or other third parties may benefit incidentally from this Section and from training materials or other communications distributed on this topic, but the Parties to this agreement intend this Section to be enforceable solely by the Commonwealth and not by employees or other third parties.

*****END GENERAL TERMS AND CONDITIONS*****

XII. SPECIAL TERMS AND CONDITIONS

- A. **ADVERTISING**: In the event a contract is awarded for supplies, equipment, or services resulting from this response, no indication of such sales or services to Virginia Military Institute will be used in product literature or advertising. The contractor shall not state in any of its advertising or product literature that Virginia Military Institute has purchased or uses any of its products or services, and the contractor shall not Virginia Military Institute in any client list in advertising and promotional materials.
- B. **ADDITIONAL GOODS AND SERVICES**: The Institute may acquire other goods or services that the supplier provides than those specifically solicited. The Institute 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 that are newly introduced during the term of this Agreement. Such additional goods and services will be provided to the Institute at favored nations pricing, terms, and conditions.
- C. **ASBESTOS**: Whenever and wherever during the course of performing any work under this contract, the contractor discovers the presence of asbestos or suspects that asbestos is present, he shall stop the work immediately, secure the area, notify the building owner and await positive identification of the suspect material. During the downtime in such a case, the contractor shall not disturb any surrounding surfaces but shall protect the area with suitable dust covers. In the event the contractor is delayed due to the discovery of asbestos or suspected asbestos, then a mutually agreed extension of time to perform the work shall be allowed the contractor but without additional compensation due to the time extension.

D. AS BUILT DRAWINGS: The contractor shall provide the Commonwealth 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 the Commonwealth 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 the Commonwealth upon completion of the work and prior to final payment.

E. AUDIT: The Contractor hereby agrees to retain all books, records, systems, 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. The Commonwealth of Virginia, its authorized agents, and/or State auditors shall have full access to and the right to examine any of said materials during said period.

F. CANCELLATION OF CONTRACT: Virginia Military Institute 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.

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

H. CONTRACTOR REGISTRATION: If a contract for construction, removal, repair or improvement of a building or other real property is for one hundred and twenty thousand dollars (\$120,000) or more, or if the total value of all such contracts undertaken by offeror within any 12-month period is seven hundred and fifty thousand dollars (\$750,000) or more, the offeror is required under Title 54.1-1100, *Code of Virginia* (1950), as amended, to be licensed by the State Board of Contractors a "CLASS A CONTRACTOR." If such a contract is for ten thousand dollars (\$10,000) or more but less than one hundred and twenty thousand dollars (\$120,000), or if the total value of all such contracts undertaken by offeror within any 12-month period is between one hundred and fifty thousand dollars (\$150,000) and seven hundred and fifty thousand dollars (\$750,000) or more, the offeror is required to be licensed as a "CLASS B CONTRACTOR." If such a contract is for one- thousand dollars (\$1,000) or more but less than ten thousand dollars (\$10,000), or if the contractor does less than \$150,000 in business in a 12-month period, the offeror is required to be licensed as a "CLASS C CONTRACTOR." The board shall require a master tradesmen license as a condition of licensure for electrical, plumbing and heating, ventilation and air conditioning contractors. The bidder/offeror shall place on the outside of the envelope containing the bid/proposal and shall place in the bid/proposal over his signature whichever of the following notations is appropriate, inserting his contractor license number:

Licensed Class A Virginia Contractor No. _____ Specialty _____

Licensed Class B Virginia Contractor No. _____ Specialty _____

Licensed Class C Virginia Contractor No. _____ Specialty _____

If the bidder/offeror shall fail to provide this information on his bid/proposal or on the envelope containing the bid/proposal and shall fail to promptly provide said contractor license number to the Commonwealth in writing when requested to do so before or after the opening of bid/proposals, he shall be deemed to be in violation of § 54.1-1115 of the *Code of Virginia* (1950), as amended, and his bid/proposal will not be considered.

If the bidder/offeror shall fail to obtain the required license prior to submission of his bid/proposal, the bid/proposal shall not be considered.

- I. CONTRACTOR'S TITLE TO MATERIALS: No materials or supplies for the work shall be purchased by the contractor or by any subcontractor subject to any chattel mortgage or under a conditional sales or other agreement by which an interest is retained by the seller. The contractor warrants that he has clear title to all materials and supplies for which he invoices for payment.
- J. DELIVERY AND STORAGE: It shall be the responsibility of the contractor to make all arrangements for delivery, unloading, receiving and storing materials in the building during installation. The owner will not assume any responsibility for receiving these shipments. Contractor shall check with the owner and make necessary arrangements for security and storage space in the building during installation.
- K. EXCAVATION PERMIT: No digging, boring, or post driving is allowed on Institute property without prior written approval of the Physical Plant Engineering Office and the IT Office. Approval requires obtaining a VMI Excavation Permit with signatures from both offices a minimum of five days prior to excavation. The Permit(s) must be available for inspection at the job site during the excavation process. Failure to comply with these requirements will result in work shutdown, repair of damages by the Contractor, and may result in a fine, contract termination, and/or default.
- L. FINAL INSPECTION: At the conclusion of the work, the contractor shall demonstrate to the authorized owner's representative 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.
- M. INDEMNIFICATION: Contractor agrees to indemnify, defend and hold harmless the Commonwealth of Virginia, its officers, agents, and employees from any claims, damages and actions of any kind or nature, whether at law or in equity, arising from or caused by the use of any materials, goods, or equipment of any kind or nature furnished by the contractor/any services of any kind or nature furnished by the contractor, provided that such liability is not attributable to the sole negligence of the using agency or to failure of the using agency to use the materials, goods, or equipment in the manner already and permanently described by the contractor on the materials, goods or equipment delivered.
- N. IDENTIFICATION OF RESPONSE ENVELOPE: The signed response should be returned in a separate

envelope or package, sealed and identified as follows:

From: _____

Name of Offeror	Due Date	Time
<hr/>		
Street or Box No.	RFQ Number	
<hr/>		
City, State, Zip Code	RFQ Title	

Name of Purchasing Officer: _____

The envelope should be addressed as directed on the title page of the solicitation.

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 response to be disqualified. Responses may be hand delivered to the designated location in the office issuing the solicitation. No other correspondence or other responses should be placed in the envelope.

- O. 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 the Commonwealth.
- P. KEYS: If the Contractor is given keys for this project, it is the Contractor's responsibility to return the keys when the contract is terminated, as well as for the safekeeping of the keys during the contract period. The Contractor shall not loan or duplicate the keys. In the event the Contractor loses the keys, they will be charged for the replacement of the keys and any locks which are rekeyed or replaced.
- Q. LATE RESPONSES: To be considered for selection, responses must be received by the issuing office by the designated date and hour. The official time used in the receipt of responses is that time on the automatic time stamp machine in the issuing office. Responses received in the issuing office after the date and hour designated are automatically non-responsive and will not be considered. The Institute is not responsible for delays in the delivery of mail by the U.S. Postal Service, private couriers, or the Post Mail system. It is the sole responsibility of the Offeror to ensure that its response reaches the issuing office by the designated date and hour.
- R. 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.
- S. OPERATING VEHICLES ON Virginia Military Institute Post: Operating vehicles on sidewalks, plazas,

and areas heavily used by pedestrians is prohibited. In the unlikely event a driver should find it necessary to drive on Virginia Military Institute sidewalks, plazas, and areas heavily used by pedestrians, the driver must yield to pedestrians. For a complete list of parking regulations, please go to www.vmi.edu; or to acquire a service representative parking permit, contact Parking Services at 540-464-7017. The safety of our students, faculty and staff is of paramount importance to us. Accordingly, violators may be charged.

T. OWNER'S RIGHT TO TERMINATE THE CONTRACT FOR CAUSE:

1. If the contractor should be adjudged as bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, the owner may terminate the contract. If the contractor should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if he should fail to make prompt payment to subcontractors or suppliers of material or labor, or persistently disregards laws, ordinances, or the written instructions of the owner, or otherwise be guilty of a substantial violation of any provision of the contract, then the owner may terminate the contract.
2. Prior to termination of the contract, the owner shall give the contractor and his surety ten (10) calendar day's written notice, during which the contractor and/or his surety may rectify the cause of the termination. If rectified to the satisfaction of the owner within said ten (10) days, the owner may rescind its notice of termination. If it does not, the termination for cause shall become effective at the end of the ten-day (10) notice period. In the alternative, the owner may postpone the effective date of the termination notice, at its sole discretion, if it should receive reassurances from the contractor and/or its surety that the causes of termination will be remedied in a time and manner, which the owner finds acceptable. If at any time more than ten (10) days after the notice of termination, the owner determines that contractor and/or its surety has not or is not likely to rectify the causes of termination in an acceptable manner or within the time allowed, then the owner may immediately terminate the contract for cause by giving written notice to the contractor and its surety. In no event shall termination for cause terminate the obligations of the contractor's surety on its payment and performance bonds.
3. Notice of terminations, whether initial or given after a period of postponement, may be served upon the contractor and the surety by mail or any other means at their last known places of business in Virginia or elsewhere, by delivery to any officer or management/supervisory employee of either wherever they may be found, or, if no such officer, employee or place of business is known or can be found by reasonable inquiry within three (3) days, by posting the notice at the job site. Failure to accept or pick up registered or certified mail addressed to the last known address shall be deemed to be delivery.
4. Upon termination of the contract, the owner shall take possession of the premises and of all materials, tools, and appliances thereon and finish the work by whatever method he may deem expedient. In such case the contractor shall not be entitled to receive any further payment. If the expense of finishing the work, including compensation for

additional managerial and administrative services shall exceed the unpaid balance of the contract price, the contractor shall pay the difference to the owner, together with any other expenses of terminating the contract and having it completed by others.

5. If it should be judicially determined that the owner improperly terminated this contract for cause, then the termination shall be deemed to be a termination for the convenience of the owner.
6. Termination of the contract under this section is without prejudice to any other right or remedy of the owner.

U. PERFORMANCE AND PAYMENT BONDS: The Institute reserves the right in its own discretion to require performance and payment bonds prior to execution of any award. The successful offeror shall be prepared to deliver executed Commonwealth of Virginia Standard Performance and Labor and Material Payment Bonds if so requested each in the sum of the contract amount, with the Commonwealth of Virginia, Virginia Military Institute as obligee. The surety shall be a company or companies approved by the State Corporation Commission to transact surety 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 purchasing office. Standard bond forms will be provided by the purchasing office if the Institute does so request a performance and payment bond.

Determination of the requirement to submit performance and payment bonds will be made by the Institute in its sole discretion based on the following:

- Complexity of the project
- Timeline of the project
- Evaluation of contractor's references provided
- Past history of work performance at the Institute

All offerors shall be prepared to provide said bonds upon request. If requested, cost to obtain these bonds will then be added to contractor's base price.

V. PRIME CONTRACTOR RESPONSIBILITIES: The contractor shall be responsible for completely supervising and directing the work under this contract and all subcontractors that he may utilize, using his best skill and attention. Subcontractors who perform work under this contract shall be responsible to the prime contractor. The contractor agrees that he is as fully responsible for the acts and omissions of his subcontractors and of persons employed by them as he is for the acts and omissions of his own employees

W. PROTECTION OF PERSONS AND PROPERTY: The Contractor expressly undertakes both directly and through its subcontractor(s), to take every precaution at all times for the protection of persons and property that may come on the building site or be affected by contractor's operation in connection with the work.

The Contractor shall be solely responsible for initiating, maintaining, and supervising all safety

precautions and programs in connection with the work. The provisions of all rules and regulations governing safety as adopted by the Safety Codes Commission of the Commonwealth of Virginia, issued by the Department of Labor and Industry under Title 40.1 of the Code of Virginia shall apply to all work under this contract.

- X. PUBLIC POSTING OF COOPERATIVE CONTRACTS: Any resulting cooperative contract(s) to this solicitation will be posted to a publicly accessible website. Contents identified as proprietary information will not be made public.
- Y. SUBCONTRACTS: No portion of the work shall be subcontracted *without prior written consent of the Institute*. In the event that the contractor desires to subcontract some part of the work specified herein, the contractor shall furnish the purchasing agency 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 its subcontractor(s) and shall assure compliance with all requirements of the contract.
- Z. SUBMISSION OF INVOICES: All invoices shall be submitted within sixty days of contract term expiration for the initial contract period as well as for each subsequent contract renewal period. Any invoices submitted after the sixty day period will not be processed for payment. Invoices are to be submitted ELECTRONICALLY to payables@vmi.edu

AA. TRAINING, OPERATION, AND MAINTENANCE OF EQUIPMENT:

- 7. The contractor, in conjunction with his subcontractors and suppliers, shall provide the owner's operations and maintenance personnel with instruction and training in the proper operation and maintenance of the equipment and related controls provided or altered in the work.
- 8. The contractor shall provide the owner with a minimum of two (2) copies of operating, maintenance and parts manuals for all equipment provided in the project. Further specific requirements may be indicated in the specifications.

BB. USE OF PREMISES AND REMOVAL OF DEBRIS:

- 1. The contractor shall:
 - a. Perform his contract in such a manner as not to interrupt or interfere with the operation of any existing activity on the premises or with the work of any contractor;
 - b. Store his apparatus, materials, supplies, and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractor; and
 - c. Place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work.
- 2. The contractor expressly undertakes, either directly or through his subcontractor(s), to effect all cutting, filling, or patching of his work required to make the same conform to the

drawings and specifications, and, except with the consent of the owner, not to cut or otherwise alter the work of any other contractor. The contractor shall not damage or endanger any portion of the work or premises, including existing improvements, unless called for by the contract.

3. The contractor expressly undertakes, either directly or through his subcontractor(s), to clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that at all times the site of the work shall present a neat, orderly, and workmanlike appearance. No such refuse, rubbish, scrap material, and debris shall be left within the completed work nor buried on the building site, but shall be removed from the site and properly disposed of in a licensed landfill or otherwise as required bylaw.
 4. The contractor expressly undertakes, either directly or through his subcontractor(s), before final payment, to remove all surplus material, false work, temporary structures, including foundations thereof, plants of any description and debris of every nature resulting from his operations and to put the site in a neat, orderly condition; to thoroughly clean and leave reasonably dust free all finished surfaces including all equipment, piping, etc., on the interior of all buildings included in the contract; and to thoroughly clean all glass installed under the contract including the removal of all paint and mortar splatters and other defacements. If a contractor fails to clean up at the completion of the work, the owner may do so and charge for costs thereof to the contractor.
 5. During and at completion of the work, the contractor shall prevent site soil erosion, the runoff of silt and/or debris carrying water from the site, and the blowing of debris off the site in accordance with the applicable requirements and standards of the Virginia Erosion and Sediment Control Handbook, latest edition, and of the contract documents.
 6. The contractor shall not operate or disturb the setting of any valves, switches or electrical equipment on the service lines to the building except by proper previous arrangement with the owner. The contractor shall give ample advance notice of the need for cut-offs, which will be scheduled at the convenience of the owner.
- CC. WARRANTY (COMMERCIAL): The contractor agrees that the goods or services furnished under any award resulting from this solicitation shall be covered by the most favorable commercial warranties the contractor gives any customer for such goods or services and that the rights and remedies provided therein are in addition to and do not limit those available to the Commonwealth by any other clause of this solicitation and rights and remedies permitted under applicable law. A copy of this warranty should be furnished with the bid/proposal.
- DD. WORK SITE DAMAGES: Any damage to existing utilities, equipment or finished surfaces resulting from the performance of this contract shall be repaired to the Commonwealth's satisfaction at the contractor's expense.

XIII. ADDENDUM:

Any ADDENDUM issued for this solicitation may be accessed at <http://www.eva.virginia.gov> under the

VBO.

Because a paper copy of the addendum will not be mailed to you, we encourage you to check the web site regularly.

XIV. CONTRACT ADMINISTRATION:

Eric Schwartz, Deputy Director for Physical Plant and Facilities, at Virginia Military Institute or qualified designee, shall be identified as the Contract Administrator and shall use all powers under the contract to enforce its faithful performance.

The Contract Administrator, or qualified designee, shall determine the amount, quantity, acceptability, fitness of all aspects of the services and shall decide all other questions in connection with the services. The Contract Administrator, or qualified designee, shall not have authority to approve changes in the services which alter the concept or which call for an extension of time for this contract. Any modifications made must be authorized by Virginia Military Institute's Procurement Services through a written amendment to the contract.

CONFLICT OF INTEREST STATEMENT

Ensure that the solicitation is thoroughly read and completed. Complete, sign and return the information requested below with your proposal. FAILURE TO FURNISH THIS DATA MAY RESULT IN REJECTING YOUR PROPOSAL.

NAME: _____

ADDRESS: _____

CITY/STATE: _____

TELEPHONE NUMBER: _____

FEDERAL ID NUMBER(FIN): _____

THE ABOVE FIRM IS A: (CHECK, AS APPLICABLE)

- | | |
|--|--|
| <input type="checkbox"/> SMALL BUSINESS | <input type="checkbox"/> INDIVIDUAL BUSINESS |
| <input type="checkbox"/> WOMAN-OWNED BUSINESS | <input type="checkbox"/> SOLE PROPRIETORSHIP |
| <input type="checkbox"/> MINORITY-OWNED BUSINESS | <input type="checkbox"/> PARTNERSHIP |
| <input type="checkbox"/> SHELTERED WORKSHOP | <input type="checkbox"/> CORPORATION |

RELATIONSHIP WITH THE COMMONWEALTH OF VIRGINIA:

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, SECTION 2.1-639.1-639.24? ☐ YES ☐ NO

IF YES, EXPLAIN:

SIGNATURE OF OFFEROR

DATE

Please tell us how you received this solicitation:

- ☐ It was mailed to you directly.
☐ You requested a copy through the Virginia Business Opportunities.
☐ You obtained a copy from the Virginia Department of Small Business and Supplier Diversity
☐ Other (please specify)_____.

QUALIFICATIONS OF OFFEROR: Offerors must have the capability and capacity in all respects to fully satisfy the contractual requirement.

Indicate the length of time you have been in business providing this type of service. ____ Years
____ Months

Provide a list of current references, either college, Educational Institutions, and/or other companies that your firm is servicing. Include the length of service, dollar volume, year contract was entered into, and the name and address of the person the State has your permission to contact. Such listing shall be comprehensive of your firm's customer base and can be formatted as follows:

CURRENT ACCOUNTS:

Account Name, Address & Phone #	Length of Service	\$ Volume/Year
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

LOST ACCOUNTS:

Account Name, Address & Phone #	Length of Service	\$ Volume/Year
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

REFERENCES

Please list at least three references for whom you have performed each applicable category of service specified herein and within the past five years.

CLIENT: _____

ADDRESS: _____

CONTACT
PERSON/PHONE#: _____

APPROXIMATE DOLLAR VOLUME PER YEAR: _____

PROJECTS/DATES/DESCRIPTION: _____

CLIENT: _____

ADDRESS: _____

CONTACT
PERSON/PHONE#: _____

APPROXIMATE DOLLAR VOLUME PER YEAR: _____

PROJECTS/DATES/DESCRIPTION: _____

CLIENT: _____

ADDRESS: _____

CONTACT
PERSON/PHONE#: _____

APPROXIMATE DOLLAR VOLUME PER YEAR: _____

PROJECTS/DATES/DESCRIPTION: _____

Please use a separate sheet of paper for additional references.

Small Business Certification

Definitions

Small Business: "Small business " means 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. Note: This shall not exclude SBSD-certified women- and minority-owned businesses when they have received SBSD small business certification.

Women-Owned Business: Women-owned business means a business concern that is at least 51% owned by one or more women who are citizens of the United States or non-citizens who are in full compliance with United States immigration law, 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 United States immigration law, and both the management and daily business operations are controlled 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.

Minority-Owned Business: Minority-owned business means a business concern that is at least 51% owned by one or more minority individuals 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.

All small businesses must be certified by the Commonwealth of Virginia Department of Small Business and Supplier Diversity (SBSD) by the due date of the solicitation to participate in the SWaM program. Certification applications are available online at www.sbsd.virginia.gov.

Offeror Name: _____

Preparer Name: _____ Date: _____

Instructions

- A. Businesses certified by the Department of Small Business and Supplier Diversity (SBSD) as a small business must complete Section A of this form.

Section A

CERTIFICATION TYPE (check only one below):

_____ Small Business

_____ Small and Women-owned Business

_____ Small and Minority-owned Business

Certification Number: _____ Certification Date: _____

Expiration Date: _____

NOTE: It is your responsibility to ensure that your certification is renewed and does not lapse. Should your certification expire, you will no longer be eligible to receive awards under this contract.

ATTACHMENT F

VMI CONTRACTOR / VENDOR STANDARDS OF CONDUCT

The contractor shall be responsible for controlling employee conduct, for assuring that its employees are not boisterous or rude, and are not engaging in any destructive or criminal activity.

Foul language of any kind will not be tolerated. Engaging in verbal or physical behavior that causes distress to cadets, faculty, staff and/or employees will result in immediate removal from the job site.

All employees of the contractor and subcontractors shall wear uniforms or other appropriate Institute approved attire at all times to designate their affiliation with the contractor.

Brandishing a firearm, whether threatening or non-threatening, will result in immediate removal from the job site.

Contractor's employees who appear to be under the influence of alcohol or other substance shall not be permitted on VMI property.

Contractor's employees shall not use VMI owned equipment without the distinct permission of the Director of Physical Plant or Director of Construction or their designees. This equipment includes but is not limited to telephones and computers, hand tools and operable equipment.

The contractor is also responsible for insuring that its employees do not disturb papers on desks, or open desk drawers, cabinets or briefcases, or use the Institute equipment and the like, except as authorized in the preceding paragraph.

Smoking is not permitted on Post or at other VMI owned property except in **designated areas** as indicated by **General Order 45**. Tobacco use in VMI-owned or leased buildings, covered walkways, temporary enclosed structures, trailers, and tents as well as structures placed on state-owned property by contractors or vendors is prohibited. Tobacco use in VMI provided vehicles is prohibited. Outside smoking or tobacco use will not be permitted within 50 feet of building entrances or exits. Smoking will not be permitted in outside areas identified as hazardous areas.

Agreed to by:

_____	SIGNATURE
_____	PRINTED NAME
_____	COMPANY
_____	DATE

TRADE CONSIDERATION

Contractor Pool for Non-Capital Construction, Renovation and Repair Services for projects valued at less than \$50k

Check all trades for which your firm is proposing:

TRADE:	CHECK ALL THAT APPLY FOR CONSIDERATION
General Construction	
Asbestos Remediation	
Asphalt Repair	
Casework/Millwork	
Concrete Work	
Demolition	
Disaster Recovery	
Dry Wall Installation/Finishing	
Electrical	
Elevator Inspections	
Excavation/Grading	
Exterior Waterproofing	
Fencing	
Fire System Services	
Flooring Installation/Refinishing	
Guttering	
HVAC	
Insulation services	
Masonry	
Mechanical	
Metal Fabrication	
Mold Remediation	
Painting	
Plumbing	
Roofing	
Tile and Grout Work	
Solar Panels	
Water Mitigation	
Welding	
Window & Door Repair/Replacement	
OTHER: (Describe)	

ADDITIONAL REQUIRMENTS FOR
ELECTRICAL MATERIALS AND INSTALLATION

1. WORK INCLUDED

- A. The Contractor shall furnish all labor, supervision, materials and equipment for the completion of all work described on the drawings and in the general specifications.
- B. These requirements are designed to indicate quality of work by the Institute and to specify materials generally found in electrical work.
- C. Special installation and material requirements listed on drawings or in the general specifications shall take precedence over these requirements. Contractor shall provide all materials, equipment and electrical connection required to provide the Institute with safe, operable and legal lighting and power systems.

2. STANDARDS AND CODES

- A. Electrical equipment shall be installed in accordance with the latest adopted standards of the National Fire Protection Association (NFPA), National Electrical Code (NEC), and the National Electrical Safety Code. All work shall also comply with the applicable state and municipal laws and codes covering each class of work.
- B. All 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). All equipment and material, for which there are UL standards, shall bear UL label of approval for use intended.
- C. All work shall conform to the Virginia Uniform Statewide Building Code.

3. SHOP DRAWINGS

- A. Submit shop drawings on the following, if other than specified, for approval. Submittals shall be presented to the project manager.
 - 1. Switchboard
 - 2. Panel boards and circuit breakers
 - 3. Wiring devices and cover plates
 - 4. Lighting fixtures
 - 5. Raceways
 - 6. Connectors
 - 7. Dimmer switch
 - 8. Clock system

9. Disconnect switches, both fused and non-fused
 10. Starters, both manual and automatic combination
 11. Fire alarm systems
- B. Any modifications required due to substitution (approved or otherwise) will be completed by the Contractor at no expense to the Institute.

4. MATERIALS AND EQUIPMENT STANDARDS

- A. All materials and equipment shall be new and in first class condition, unless otherwise specified, and shall conform to grade, duty, quality, and standards specified.
- B. Before placing orders for materials and equipment to be furnished, the Contractor shall determine that equipment will properly fit in allocated spaces with proper area allowed for servicing: that electrical apparatus are of proper voltage, phase and current rating and will function properly. If the Contractor finds specified material that will not operate or fit properly, he shall immediately notify the project manager.
- C. The setting of equipment shall be carefully coordinated with the requirements of other trades or divisions to insure compatibility.

5. WORKMANSHIP

- A. The work shall be executed in the best and most workmanlike manner by qualified, careful and efficient certified journeyman electricians in strict accordance with the specifications and drawings and be supervised by a certified master electrician.
- B. Work required to be accomplished by certified journeyman electrician shall include, but not be limited to, the following:
1. Installation of conduit support systems
 2. Installation of all conduit for electrical and telephone systems both above and below grade, interior and exterior.
 3. Wire pulling using equipment designed for the purpose.
 4. Setting of manholes, hand holes and underground splice boxes
 5. All electrical terminations, splicers, and connections
 6. Mounting of all switch boards, panel boards, load centers, junction boxes, outlet boxes, safety switches, etc.
 7. All other work generally associated with the electrical trade.

6. WIRING METHODS

A. CONDUIT

1. All electrical conduits shall be E.M.T., I.M.C. or Rigid conduit. Flexible metallic conduit may be used for short runs or in hollow parts of existing partitions. Wiremold, PVC, and M.C. cable may be used only when specified or with permission from VMI Physical Plant.
2. All horizontal and vertical runs of conduit shall be properly grouped and hung to true alignment using substantial and appropriate hangers, clamps, straps, etc. equivalent to Kindorf, Crouse Hinds or Steel City. Hanger and supports will be fastened to building structure at intervals not exceeding the spacing required by NEC. All conduits will be level and plum and installed parallel or perpendicular to structural walls.
3. Conduit shall be installed as a complete system without conductors and shall be continuous from outlet and from fitting to fitting, being mechanically and electrically connected to all boxes, fittings, wire ways, etc., and shall be properly grounded.
4. Conduit shall be concealed unless otherwise specified. Conduit may be run exposed in all spaces used only to house mechanical and electrical equipment or with authorization of project manager.
5. Electrical metallic tubing may be used in sizes 4 inches and smaller (except in floor slabs) in building interiors.
6. Conduit shall be sized as indicated on the drawings and where sizes are not shown, shall be sized to the minimum requirements of the NEC.
7. Conduits installed underground or in concrete slabs shall be schedule 40 P.V.C.
8. P.V.C conduit installed underground shall be converted to rigid metal conduit 90° bend and straight section before extending above grade. This applies to areas where conduit is exposed and subject to abuse.
9. Bends in conduit shall not reduce the interior diameter.

B. OUTLET, PULL AND JUNCTION BOXES

1. All outlet, pull and junction boxes shall be readily accessible.
2. All outlet, pull, and junction boxes will be no smaller than four inches square unless otherwise specified. Boxes designated as communication (telephone) outlets shall be minimum 2 ½" deep with 1" knockouts.
3. Mounting heights of outlets in tile or non-plastered masonry may be varied plus or

minus to the nearest joint or shall match adjacent existing outlets.

4. Where boxes occur in suspended tile ceilings, boxes will be secured to the building structure and shall not depend on suspended ceiling for support.
5. Where boxes occur in a plaster ceiling, boxes shall be securely supported to building structure and anchored to ceiling suspended system in an approved manner.
6. All outlet, pull and junction boxes shall be securely fastened to building structure.
7. All concealed outlet boxes, with or without plaster rings, shall be installed flush with finished surface.
8. All boxes will have covers installed before project will be considered complete.
9. Pull boxes shall be installed at all necessary points, whether indicated on the drawings or not, to prevent injury to the insulation or other damage that might result from pulling resistance or for other reasons necessary to proper installation. Minimum dimensions shall not be less than the sizes shown, or as required by NEC. The minimum dimensions shall be increased if necessary for practical reasons or where required to fit a job condition.
10. Contractor shall coordinate and review all drawings for rough-in locations for outlets with all trades before installation.

C. CONDUCTORS AND ELECTRICAL TERMINATIONS

1. All wiring shall be installed in threaded rigid metal conduit, electrical metallic tubing (EMT), PVC, raceways or flexible metal conduit subject to the restrictions of the NEC.
2. Conductors shall be continuous from outlet to outlet with splices made only in junction and outlet boxes, and in pull boxes only as required to meet certain conditions.
3. The branch circuit wiring will be designed to utilize the advantages of multi-wire distribution and shall be installed substantially as indicated on the drawings. No major changes in the grouping or general routing of the branch circuits shall be made without the approval of the project manager.
4. No branch circuit shall be less than 20 amperes with #12 AWG conductors.
5. Stranded conductors shall be terminated in at terminals designed to accommodate stranded wire or shall be terminated with an appropriate, compression lugs. Stranded wire shall not be wrapped around terminal screws unless they have been tinned with rosincore solder.

6. MC type cable and nonmetallic sheathed cable shall be used only with specific permission of VMI Physical Plant. BX type cable shall not be used.
7. The number of conductors in each conduit shall not exceed 5 (including the grounded conductor and grounding conductor) without specific permission of VMI Physical Plant.
8. Circuit breakers serving branch circuits shall have only 1 conductor connected to load side. Conductors serving branch circuits shall exit panel only once.
9. Ungrounded conductors not connected to circuit breakers shall not pass through panel or switch boards.
10. No splices or other junctions for branch circuits shall be allowed in panels or switchboards.
11. All conductors in outlet boxes serving switches and outlets shall be "pig tailed". This shall include the ungrounded conductors.

D. GROUNDING

1. All grounding will be in accordance with NEC.
2. Provide a green grounding conductor for all electrical equipment, apparatus, lighting and devices.
3. All motor starters, motor frames, panel boards, control panels and convenience outlets shall be grounded by a green grounding conductor.
4. Bonding jumpers shall be installed at all locations required by the NEC. Bare grounding conductors where passing through steel sleeves shall be bonded to the steel at entrance and exit.
5. A main grounding conductor shall be provided to bond the largest cold water pipe at the pipe's entrance to the building. Supplemental grounds as required by the NEC will be installed. When appropriate, grounding connections shall be exothermic welds by the Cadweld Co. or equivalent.
6. Provide all necessary equipment grounds including telephone, intercom, fire alarm, clock system, etc.

E. TRENCHING AND EXCAVATIONS

1. Furnish, erect and maintain all shoring, sheeting, bracing and pumping equipment required to support and protect all excavations. Provide all barriers, signs and lights

required to protect workmen and the public in and around excavated areas.

2. Backfill all excavations to existing or finished grades, whichever is lower, with clean earth. The backfilling shall be tamped to prevent settlement of the backfill. Areas under roadways, parking lots and walkways shall be backfilled with a cement slurry mix.
3. All conduits shall be at a depth as required by NEC.
4. All underground conduits to be concrete encased unless otherwise noted. Provide warning tape one half the distance between the concrete and finished grade.
5. Excavated soil being retained for backfill shall be stored on the uphill side of excavated area.

F. PENETRATION OF RATED WALLS AND FLOORS

1. Where holes through beams are required for the passage of conduits, and where such holes are not already provided or are improperly located to suit the needs, cut the necessary holes upon the approval of and as directed by the Owner. These holes shall be true smooth circles, sawed, drilled or reamed to the smallest practical diameter as near the beam centers as practical. No holes shall be cut through any beam if any other practical and acceptable pipe route is available, and no such hole shall be cut without written permission from the Owner. Holes shall not be cut through concrete structural members. Openings which might offer a hazard to occupants and passersby in the building and grounds shall be adequately guarded and shall be closed in as soon as practical
2. All openings created by Contractor and surfaces damaged by Contractor shall be patched and refinished to original condition.
3. All partitions and floors with fire ratings shall be patched and repaired in a manner that will not reduce rating of partitions or floors.

G. WIRING COLORS

1. All wiring colors shall be as follows:

<u>120/208V Systems</u>	<u>277/480V Systems</u>
A Phase - Black	Brown
B Phase - Red	Orange
C Phase - Blue	Yellow
Neutral - White	White or Grey
Ground - Green	Green
2. White shall not be used as a switch leg conductor.

H. LIGHTING FIXTURES

1. Mounting heights of fixtures are, in most cases, indicated on the drawings. Where job conditions require mounting heights different from those shown or specified to avoid equipment, structural features, etc., such changes in mounting height shall be as directed without additional cost to the Owner.
2. When fluorescent lighting fixtures occur in suspended tile ceilings, Contractor shall install an additional ty-wire support at each corner of the fixture. These supports shall be independent of ceiling support wires.
3. All fixtures specified or otherwise will be complete to include lamps.
4. Fixtures designated to be mounted on combustibile surfaces shall be spaced 1-½" using spacers designated for that purpose.
5. Exterior lighting fixtures shall be identified with 2" high vinyl digits installed 18" above base on side towards roadway or sidewalk.

I. DESIGNATION OF CIRCUITS AND EQUIPMENT

1. Provide a corrected panel board directory for all additions to existing panel boards.
2. Provide new type written directories for new panel board installation.
3. Provide laminated plastic identification tags for panel boards, safety switches, individual enclosed circuit breakers, motor starters, and lighting contactors.

J. MATERIALS AND EQUIPMENT SPECIFICATIONS

The intent of this section is to specify acceptable material and equipment used in general electrical work. Special equipment and materials will be specified in the Special Conditions section or on drawings.

1. All switches or lighting and similar loads will be specification grade, rated 20A, 120/277V and will be back and side wired with clamp connectors.
2. All convenience receptacles shall be specification grade, 3 wire, grounding type, rated 20A, 125V and will be back and side wired with clamp connectors.
3. All wire and cable shall be insulated for 600 volts and shall be single conductor equivalent to General Electric or Phelps Dodge. All conductors shall be multiple stranded.
4. All conductors shall be copper.

5. All feeder and branch circuit wiring shall be Type THWN/THHN except where ambient temperature conditions require the use of insulations having a higher temperature rating, such as wiring of recessed fixtures or wiring located in hot locations where conductor temperatures would exceed 75°C.
6. Conductors sizes 14-8 AWG shall be connected by pre-insulation spring connectors by Ideal wire nuts, "Scotch Lok", or compression connectors by Thomas and Betts.
7. Splices and taps in conductors No. 6 AWG and larger shall be made with solder compression connectors, as manufactured by Thomas and Betts, IlSCO, or equivalent. Split bolt connectors by Kearny or IlSCO may be used under certain conditions with Owner's approval.
8. All conduit is to be manufactured by Steel City or an approved equivalent.
9. All outlet and junction boxes, except where otherwise specified, shall be of one piece galvanized construction of a type and size applicable for use in the location shown on the drawings and as required by the NEC. Boxes shall be by Steel City or an approved equivalent.
10. Set screw connectors and couplings are acceptable to 4" and are to be steel type. "Pot Metal" types not acceptable. Use two screw types if available.
11. All fluorescent fixtures to have electronic ballast compatible with application (e.g., rapid start with motion controls), and utilize high efficiency T8 or T5 type lamps as appropriate.
12. GFCI receptacles are to be feed-thru type, duplex, specification grade, rated at 20Amps.
13. Motion detector (wall mounted) to be equivalent to UNENCO Model SOM500 or Model SOM1000 depending on load requirements. Lithonia and Lutron are acceptable.
14. Device covers to be flexible thermoplastic type.

K. PANEL BOARDS, LOAD CENTERS, STARTERS, CONTROLLERS, ETC.

1. All electrical distribution equipment shall be by the Square D Company, Cutler Hammer, Siemens or General Electric.
2. Motor controlling equipment shall be by Allen Bradley, Furnas or Square D Companies.

L. TESTING

1. Maintain drawings on each project and note changes daily.
2. Testing of all electrical systems shall be in the presence of project manager.

M. AS-BUILT DRAWINGS

1. Provide project manager with as-built drawings of all electrical installations.

N. OPERATION AND MAINTENANCE MANUALS

1. Provide project manager with Operation Manual for all material installed.

ADDITIONAL REQUIREMENTS FOR
PLUMBING

1. WORK INCLUDED

- A. The Contractor shall furnish all labor, supervision, materials and equipment for the completion of all work described of the drawings, general specifications or verbal instructions.
- B. Contractor shall coordinate and review all drawings for rough-in locations with all trades before installation.
- C. These requirements are designed to indicate quality of work by the Institute and to specify materials generally found in plumbing work.
- D. Special installation and material requirements listed on drawings or in the general specifications shall take precedence over these requirements. Contractor shall provide all material, equipment and plumbing connections required to provide the Institute with safe, operable and legal plumbing systems.

2. STANDARDS AND CODES

- A. Plumbing equipment shall be installed in accordance with the latest adopted standard of the International Plumbing Code. All work shall also comply with the applicable state and municipal laws and codes covering each class of work.
- B. All material shall conform to the latest issue of all applicable standards as established by International Plumbing Code Chapter 13 Referenced Standards. All equipment and material, for which there are UL Standards, shall bear UL Label of Approval for use Intended.
- C. All work shall conform to the Virginia Uniform Statewide Building Code and Addendums to BOCA.

3. SHOP DRAWINGS

- A. Submit shop drawings on the following, if other than specified, for approval. Project Manager will review and take action on submittals.
 - 1. Water supply and distribution
 - 2. Sanitary drainage
 - 3. Fixture materials
 - 4. Vents
 - 5. Traps
 - 6. Storm drainage
 - 7. Indirect/special waste
 - 8. Water heaters

- B. Any modification required due to substitution (approved or otherwise) will be done by the Contractor at no expense to the Institute.

4. MATERIALS AND EQUIPMENT STANDARDS

- A. All materials and equipment shall be new and in first class condition, unless otherwise specified, and shall conform to grade, duty, quality and standards here in after specified.
- B. Before placing orders for materials and equipment to be furnished, the Contractor shall satisfy himself and determined that equipment will properly fit in allocated spaces with proper area allowed for servicing. If the contractor finds specified material that will not operate or fit properly, he shall immediately notify the project manager.
- C. The setting of equipment shall be carefully coordinated with the requirements of other trades or divisions to insure compatibility.

5. WORKMANSHIP

- A. The work shall be executed in the best and most workmanlike manner by qualified careful and efficient journeyman plumbers in strict accordance with the specifications and drawings and be supervised by a certified master plumber.
- B. Work required to be accomplished by certified journeyman plumbers shall include, but not be limited to, the following:
 - 1. Installation of plumbing support systems.
 - 2. Installation of all plumbing both above and below grade, interior and exterior.
 - 3. Materials and equipment designed for the purpose.
 - 4. All plumbing connections.
 - 5. Mounting of all commodes, urinals, tubs and showers, piping, lavs, water fountains, sinks, etc.
- C. All other work generally associated with the plumbing trade.

6. PIPING METHODS

- A. All water piping underground shall be approved Ductile or K Type copper. 200 PSI black plastic pipe in special applications. Ductile pipe water mains shall enter the buildings to the building main water cut off valve before the transition to copper piping is made. Water piping above ground shall be L Type copper. Drainage piping shall be cast iron or PVC when specified or with permission from VMI Physical Plant. Other special condition piping, distilled water, gas, air, etc. shall be installed to standards and requirements of the latest accepted edition of International Plumbing Codes and International Mechanical Codes.
- B. Piping shall be sized as indicated on the drawing. Sized and sloped with proper joint connections, cleanouts and supports, proper material in accordance with International

Plumbing Code.

- C. All horizontal and vertical runs of piping shall be properly hung to true alignment and proper slope using substantial and appropriate hangers, clamps, straps, etc. Hanger and supports will be fastened to building structure at intervals not exceeding the spacing required by International Plumbing Code Chapter 3 Section 308.
- D. All hot, cold lines shall be insulated. All insulation shall be non-asbestos.
- E. Linked neoprene seals shall be used in piping sleeves that penetrate walls below grade above the lowest floor level in sleeves passing through water proofed walls or floor slabs.
- F. Buildings shall be supplied with a main water cut off valve within 10' feet outside of building.
- G. Manhole covers shall be designed to VDOT traffic rate, load bearing requirements and shall include identification of the system involved (I.C. steam, sanitary sewer, storm drains, electric, etc.
- H. All cut off valves shall be within 5' feet of fire hydrant.
- I. All valve boxes and manholes shall be raised to ground level.
- J. All cleanouts and isolation valves shall be accessible.
- K. Accessible cleanouts shall be provided as necessary for all sanitary and storm systems.
- L. Access panels shall be provided to all plumbing valves and mechanical joints.
- M. Isolation valves shall be installed for all liquid piping systems, at all bathroom units and each fixture unit and must be provided at each floor. Isolation valves shall be ¼ turn ball valves. Valves shall be equivalent to the Apollo ball valve specification or as approved by the Project Manager.
- N. Exterior water hydrants are to be provided every 100' feet along walls and shall be equipped with automatic integral back flow preventers and freeze protection bleed-off. Screw-on hose bib check valves are not acceptable. Isolation valves within 5' feet of hydrant.
- O. All custodial closets shall be equipped with a floor-mounted mop sink with hot and cold water hose bibs and back flow prevention device on faucet.
- P. Trash rooms shall be equipped with hot and cold water hose bibs with isolation valves and back flow prevention device on faucet.
- Q. All solder on domestic water piping shall be lead-free.
- R. Mechanical joints on domestic water piping and DI water piping shall be sealed with teflon

tape in lieu of piping compound.

- S. Vacuum breakers/back flow preventers shall be installed below, rather than above adjacent electrical equipment. Adequate provisions must be made to catch leaks, discharges and to direct the water to a floor drain. Back flow preventers shall be installed according to the manufactures instructions and Chapter Six of the International Plumbing Code.
- T. All above grade storm drain and sanitary sewer piping shall be DWV, PVC or cast iron piping.
- U. All piping shall be at a depth required by International Plumbing Code.
- V. All underground piping shall be installed with a #10 copper wire for locating purposes. Both ends shall be terminated in an accessible location as approved by the Project Manager.
- W. All underground shall be installed with metallic warning tape so as to locate lines. Tape shall be located one-half of the distance between piping and finished grade. Tape shall be installed per manufacturer's specifications.

7. PLUMBING FIXTURES

- A. Special equipment and materials will be specified in the special condition equipment and material requirement of the general project specifications.
- B. Plumbing fixtures shall be constructed of approved material, with smooth, impervious surfaces, free from defects and concealed fouling surfaces and shall conform to standards cited in International Plumbing Code. All porcelain-enameled surfaces on plumbing fixtures shall be acid resistant.
- C. All bathroom fixtures (commodes, urinals and sinks) shall be caulked to prevent water penetration around the fixture.
- D. Floor mounted commodes are more cost effective and preferred over wall mounted commodes due to vandalism.
- E. Flush valves shall be of the water-conservation type.
- F. Lavatories shall accommodate only 4" faucets to be installed in bathroom areas.
- G. Lavatory faucets shall be single lever commercial heavy-duty faucets.
- H. Installation of shower basin connections to drains through slab must be properly aligned and water tight, floor waterproofing should be designed to prevent leakage, shower pan or approved membrane, to prevent leakage from a cracked shower basin into ceiling below.
- I. Installation of shower valves and showerheads in shower compartments shall be installed on a sidewall in the shower unit so that the spray from the showerhead does not spray toward the threshold or shower curtain.

- J. Floor drains shall be installed in all bathrooms, trash rooms, kitchen, custodial closets, storage rooms and any other rooms that have a sink or running water in them. Floor drains shall be flush-mounted with removable covers. Floor should slope to floor drains.
- K. Shower valves shall be lever handle, integral volume control with integral stops.
- L. Shower Head Specification (Standard)—Shower head, heavy duty, solid brass, chrome-plated, no removable parts, self-cleaning, six selectable flow patterns, integral flow control, pressure compensating 2.75 gallons per minute flow from 20 to 80 PSI, drip position in lieu of full cut off for temperature stabilization, swivel ball joint, ½" female pipe thread-mounting nut.
- M. Shower Head Specification (Theft Resistant)—Shower head, heavy duty, theft resistant, solid brass, chrome-plated, no removable parts, self-cleaning, six selectable flow patterns, integral flow control, pressure compensating 2.75 gallons per minute flow from 20 to 80 PSI, drip position in lieu of full cut off for temperature stabilization, swivel ball joint, ½ inch female pipe thread-mounting nut.

8. FLOW CONTROLS ON FAUCETS AND/OR SHOWER HEADS

- A. Provide Omni Products, Inc., or Facilities Management Operations approved equivalent, flow control devices for all faucets and shower heads. Flow control rate shall be as follows:
 - Lavatory faucets 1.5
 - GPM Kitchen faucets
 - 2.75 GPM Sink faucets
 - 2.75 GPM Bar faucets
 - 1.5 GPM
- B. If laminar flow is desired, add: flow control device installed in the faucet spout end shall provide a non-gerated, coherent stream of water. Flow rates shall be field variable with interchangeable flow control devices. Units shall be vandal-proof.

9. PAINTING, LABELING AND IDENTIFICATION

- A. Identification of piping valves and equipment shall be in accordance with Chapter VII of the Construction and Professional Services Manual. The exception is piping in mechanical equipment rooms does not need to be painted if it is covered with insulation and marked with appropriate color bands, system name tags (pipe marker or stencil) and flow arrows.
- B. Paint uninsulated mechanical piping, equipment, duct work and equipment supports.
- C. Paint fire protection piping, equipment and supports.

- D. Paint uninsulated plumbing pipe, equipment and supports.
- E. Identify pipes throughout with pipe markers.
- F. Tag valves and provide directory.
- G. Label all controls, switches, gauges, etc.

10. IDENTIFICATION OF EQUIPMENT AND VALVES

- A. Tag valves with 1 ½" diameter brass tag with depressed black-filled numbers ½" high. Fasten tag to valve with brass "s" hook or brass jack chain. Tags shall be Style 250 BL 95 manufactured by Seaton Name Plate Co. or approved equivalent. Valve tags shall begin with number one and be numbered consecutively.
- B. Prepare typewritten valve directories showing valve number, location, type of service and equipment controlled and normal position of valve. Frame directories under 1/8" thick clear plastic and mount as directed by the Engineers. A separate directory shall be provided for each major plumbing where the purpose of the valve is obvious; valves are not required to be tagged.
- C. All control switches, gauges, shall be identified with a machine engraved plastic nameplate. Each of the following items shall be identified with a machine engraved plastic nameplate. Water heaters, control panels, unit heaters, condensate pump controls, and similar type equipment. Letter size on plates for equipment identification shall be not less than ¾" high. Labels shall be secured in place with screws or epoxy.

11. IDENTIFICATION OF PIPING

- A. Identify all piping installed under this Division, except as noted below, by means of plastic pipe markers equivalent to "Opti-Code" as manufactured by Section Name Plate Co., Wilmington Plastic Co., approved equivalent or equivalent stencil. Marker shall be color-coded and shall be lettered in accordance with ANSI Specification A13.1. All markers shall be held in place with color-coded tape with direction of flow arrows printed on it. Apply a minimum of two complete wraps of tape at each end of pipe markers equivalent to Section Style # AR or approved equivalent.
- B. Color coded tape pipe markers with flow arrows shall be applied within 12" of each pipe hanger and additional markers shall be applied as to permit reasonable visual identification of each visible pipe line from access doors, shaft openings removable ceiling panels and other points of inspection. Pipe markers (or stencil) with system name, and color coded tape arrows shall be located near valves, at points where pipes penetrate wall, floors and ceilings, at the point where piping enters and exits a vessel, tank or piece of equipment. Pipe markers shall be neatly arranged and shall be applied squarely after pipelines are insulated/painted.

- C. Pipe markers are not required on small equipment connections where identification is obvious.
- D. Pipe markers are not to be installed on exposed piping in finished public spaces.
- E. Pipe markers are required in mechanical rooms and above all ceilings.
- F. The Contractor shall submit sample markers and schedule of lettering and colors to the Project Manager for review and approval.

12. PENETRATION OF RATED WALLS AND FLOORS

- A. Where holes through beams are required for the passage of piping, and where such holes are not already provided or are improperly located to suit the needs cut the necessary holes upon the approval of and as directed by the Physical Plant . These holes shall be true smooth circles, sawed, drilled ore reamed to the smallest practical diameter as near the beam centers as practical. No holes shall be cut through any beam if any other practical and acceptable pipe route is available, and no such hole shall be cut without written permission from the Physical Plant . Holes may not be cut through concrete structural members. Openings which might offer a hazard to occupants and passersby in the building and grounds shall be adequately guarded and shall be closed in as soon as practical.
- B. All openings created by Contractor and surfaces damaged by Contractor shall be patched and refinished to original condition.
- C. All partitions and floors with fire rating shall be patched and repaired in a manner that will not reduce rating of partitions or floors.
- D. All cleanouts at or above the ceiling shall be brought to the floor level above. All cleanouts shall be brought to the floor level of the fixture served.
- E. All commode flanges through the floor shall be water tight to prevent water leaking to the floor below.

13. TESTING

- A. Testing of all plumbing system shall be in the presence of the project manager.
- B. As-built drawings.
 - 1. Provide project manager with as-built drawings of all plumbing installations. Final payment will be contingent upon receipt of final documents.

ADDITIONAL REQUIREMENTS FOR
PAINTING MATERIALS AND INSTALLATION

1. WORK INCLUDED

- A. The contractor shall furnish all labor, materials, equipment and supervision for the completion of all work described on the drawings and general specifications. This shall include all materials and equipment not listed, that are required to complete project.
- B. These requirements are intended to indicate quality of work required by the Institute and to specify materials generally found in painting projects.

2. STANDARDS AND CODES

- A. Contractor shall comply with the latest editions of all Federal, State and Institute rules and regulations applicable to this work.

3. SHOP DRAWINGS

- A. Specifications are based on Duron paint products. Substitutions are allowed and are subject to the approval of VMI Physical Plant staff. Contractor must include MSDS and technical data sheets with their submittals.

4. MATERIALS AND EQUIPMENT STANDARDS

- A. Ferrous Metal Paints (rails, stair risers, etc.)
 - 1. Primers shall have the following key ingredients by weight: 24% synthetic resin complex, 20% talc and/or calcium carbonate, 10% titanium dioxide, 10% zinc hydroxphopite, 5% ferrous and/or iron oxide. Duron Dura Clad Damp Proof Red Oxide Primer Metal Primer or equivalent.
 - 2. Finish coat (all metals) shall have the following key ingredients by weight: 30% synthetic resin complex, 27% titanium dioxide, 25% calcium carbonate, 6% aluminum silicate. Duron Dura Clad Alkyd Gloss Enamel or equivalent.
- B. Galvanized Metal Primer: shall have the following key ingredients by weight, 15% titanium dioxide, 15% acrylic resin. Duron Dura Clad Acrylic galvanized Metal Primer or equivalent.
- C. Masonry Filler:
 - 1. Exterior filler shall have the following key ingredients by weight, 26% calcium

carbonate, 17% acrylic resin, 5% sodium potassium aluminum silicate, 4% pyrophyllite, 4% titanium dioxide. Duron Dura Crete Exterior 100% Acrylic Textured Coating or equivalent.

2. Interior filler shall have the following key ingredients by weight, 38% calcium carbonate, 8% titanium dioxide, 6% polyvinyl acetate resin. Duron Block Kote Latex Block Filler or equivalent.

D. Stain Bloc Primers:

1. Oil base primers shall have the following key ingredients by weight, 20% V.M. & P. Naphtha, 20% talc, 15% synthetic resin complex, 8% titanium dioxide, 8% calcium carbonate. Duron Terminator 1 Oil Based Stain Killer or equivalent.
2. Water base primer shall have the following key ingredients by weight, 18% acrylic resin, 15% titanium dioxide, 20% other solids. Duron Terminator 2 Water Based Stain Killer or equivalent.

E. Interior Paint:

1. Flat paint shall have the following key ingredients by weight, 55% solids, 25% calcium carbonate, 14% titanium dioxide, 10% latex emulsion. Duron Plastic Kote 17 Line or equivalent.
2. Eggshell paint shall have the following key ingredients by weight, 48% solids, 14% vinyl resin, 12% titanium dioxide, 8% calcium carbonate. Duron Plastic Kote 29 Line or equivalent.
3. Semi-gloss paint shall have the following key ingredients by weight, 40% solids, 20% titanium dioxide, 13% vinyl and/or styrene acrylic resin. Duron Plastic Kote 122 Line or equivalent.

F. Exterior Paint

1. Semi gloss paint shall have the following key ingredients, 21% acrylic resin, 20% titanium dioxide. Duron Weather Shield 100% Acrylic Coat or equivalent.
2. Flat paint shall have the following key ingredients, 14% acrylic resin, 15% titanium dioxide. Duron Weather Shield 100% Acrylic Latex.

5. SURFACE PREPARATION

- A. Examine areas and conditions and perform preparation and cleaning procedures in strict accordance with paint manufacturer's recommendations as approved by Owner for each condition. Do not proceed until unsatisfactory conditions are corrected.

- B. Remove all hardware, hardware accessories, plates, lighting fixtures and similar items not scheduled to receive paint finish. Remove light globes, diffusers, etc. as required for complete painting of adjacent surfaces.
- C. Scrape and remove all loose paint.
- D. Prepare areas with sand paper, as required, to ensure smooth even surface without deflection.
- E. Fill cracks, nail holes and other depressions with appropriate approved compound.
- F. Spot prime all stained and patched areas with appropriate stain blocker primer.
- G. Clean all surfaces in accordance with paint manufacturer's requirements.
- H. Glossy surfaces and old paint films shall be roughened to clean and provide a "tooth" by sanding surface. All newly applied paint must bond to existing surface.

6. PAINT APPLICATION

- A. Stir materials before application to produce uniform density mixture. Stir materials during application as required.
- B. Apply paint by brush or roller according to manufacturer's recommendations. Use brushes that have been designed for type of material being applied. Use rollers according to manufacturer's recommendations for material and texture required.
- C. Do not apply materials at less than manufacturer's recommended spreading rate. Provide a total wet and dry film thickness not less than that indicated on manufacturer's printed label.
- D. Do not paint over tape, dirt, oil, rust, scale, grease or conditions otherwise detrimental to formation of a durable and smooth finish paint film.
- E. Apply additional coats when undercoat, stain, or other condition shows through final coat of paint, or until paint film is uniform finish, color and appearance.
- F. Paint all exposed surfaces that have been previously painted. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces.
- G. Painting is not required in equipment rooms or surfaces in concealed spaces

and inaccessible areas such as furred. Spaces, utility tunnels, pipe spaces and duct shafts.

7. GENERAL REQUIREMENTS

- A. Due to large number of Institute, public, and contractor personnel that may be in the building during painting function, a particularly high standard of safety discipline and cooperation will be required of all parties, at all times.
- B. Contractor shall begin preparation and painting on top floor and work down. Each floor shall be completed before moving to next lower floor. Any deviation must be coordinated and approved by VMI Project Manager.
- C. All paint material and equipment shall be compatible with use, finish coats shall be compatible with prime coats, prime coats shall be compatible with surface to be painted. All tools and equipment shall be compatible with the coatings to be applied.
- D. Provide all paint and finish materials, surface preparation materials, drop cloths, and other required protective devices.
- E. Painting contractor shall insure that all access panels, windows or other moving items are operational upon completion. Each function shall operate smoothly without sticking or dragging due to applied paint.
- F. Clean and paint so that dust and other contaminants from cleaning process will not fall in wet newly painted surfaces.
- G. Painting may continue during inclement weather only if areas and paint surfaces are enclosed and conditioned to specify temperatures as by paint manufacturer.

8. CLEAN UP

- A. Touch up and restore any damaged finish. Touch up may require repainting entire surface to eliminate flash marks.
- B. Remove spilled, splashed and splattered paint from all surfaces including floors and baseboard. Repair all damage incurred during clean up.
- C. Perform all clean up and removal of protective materials and unused paint, cans, ladders and other materials used during painting operation.

ADDITIONAL REQUIREMENTS
FOR CONCRETE WORK

1. WORK INCLUDED

- A. The work includes the furnishing of all labor, materials, equipment and services necessary for, and reasonably incidental to, the completion of all concrete work including all accessories necessary to complete all concrete indicated by contract documents.
- B. Furnish and place all plain and reinforced, poured-in-place concrete and accessories necessary to complete all concrete work indicated by the contract documents.

2. STANDARDS AND CODES

- A. NOTE: Contractor shall comply with the latest editions and sections of all Federal, State, and Local regulations applicable to this work, including, but not limited to, the following:

Virginia Uniform Statewide Building
Code BOCA Basic Building Code
Virginia Occupational Safety and Health Standards for the Construction
Industry Occupational Safety and Health Administration (OSHA)
Regulations
Factory Insurance Association (FIA)
Regulations Underwriter's Laboratories
(U.L.) Requirements

3. GENERAL REQUIREMENTS AND PROCEDURES

- A. NOTE: All items specified in this section may not be applicable to this contract. See Special Conditions - Scope of Work.
- B. MATERIALS
 - 1. Water: Clean and free of deleterious materials.
 - 2. Cement: ASTM C150-95A, Type I (or Type II upon approval).
 - 3. Sand: Well-graded, washed, hard, durable, natural or manufactured sand conforming to ASTM C33-93A.
 - 4. Coarse Aggregate: Well-graded crushed stone, clean, hard, tough, durable, conforming to ASTM C33-93A.
 - 5. Maximum Size of Aggregate: For Class "A", 95% to 100% to pass a 1" sieve.

6. Reinforcing Steel: New billet stock of structural or intermediate grade, conforming to latest ASTM A-615, Grade 60, and CRSI Standards.
7. Lightweight Aggregate: For Class "B" concrete shall be "Solite" aggregate, conforming to ASTM C330-89B, graded 3/4" to No. 4 sieve.
8. Wire Mesh: Cold drawn steel wire, welded, conforming to latest ASTM A-185.
9. Liquid Concrete Hardener: "Clear Bond" floor treatment as manufactured by Guardian Chemical Company, or approved equivalent.
10. Form Coating: "Formfilm" by A. C. Horn, or "Form Saver" by L. Sonneborn.
11. Metal Accessories for Formwork: Richmond, Medco, or approved equivalent.
12. Metal Centering (Form Deck): Shall be 28 ga. "Consoliform S" 2.5" x 9/16" galvanized steel. Deck shall be as manufactured by consolidated Systems, Inc. or approved equivalent. Deck to be erected and secured in accordance with manufacturer's standard specifications.

B. MIXES

1. Before starting work, submit to VMI's Physical Plant for approval a laboratory design mix for each classification of concrete, prepared by a recognized testing laboratory.
2. Class "A" concrete to have a compressive strength of 4,000 psi at 28 days, using approved laboratory design mix, maximum slump 4 inches.
3. Use 5% +/- 1% "Darex" air-entraining agent, or approved equivalent, on all exposed exterior concrete.
4. Do NOT use other admixtures unless written approval is obtained from VMI's Physical Plant. Do NOT use calcium chloride.

C. FORMWORK

1. Design all forms to support the load of concrete and concreting operation.
2. Use moisture-resistant plywood for all concrete surfaces scheduled to be left exposed. Properly brace or tie the plywood to maintain position and shape. Use plywood boards as large as practical, butt joints tightly to prevent leakage of mortar, and coat plywood with "Formfilm" or "Formsaver."
3. For unexposed concrete, use forms with a reasonably true surface and sufficiently

tight to prevent leakage of mortar.

4. Space studs, walers and ties so that load of wet concrete will not stress ties and forms beyond recommended working loads to cause deflection from true surfaces.
5. Thoroughly clean and coat all forms before reuse. Obtain approval from VMI's Physical Plant before reusing forms for exposed work.

D. REINFORCING STEEL

1. Detailing, fabrication and placement of reinforcing steel to conform to CRSI Code of Standard Practice, unless otherwise detailed on the drawings.
2. Thoroughly clean all steel reinforcing before placing. Remove all loose rust scale and other coating of any character that will destroy or reduce bond. Re-inspect steel reinforcing, and if necessary, re-clean.
3. Place reinforcing in accordance with plans and as specified. Secure in position in such a manner as to prevent displacement during pouring of concrete. Block reinforcing from forms by means of chairs, bolsters or other approved devices, in accordance with CRSI standards, and as approved by VMI's Physical Plant.
4. Lap all reinforcing wire mesh at least one space at ends and sides. Lap all bars 24 diameters, unless shown otherwise on the drawings.

E. LOCATION OF WELDED WIRE FABRIC

1. Location of wire fabric in slabs on grade to depend on slab thickness, as follows:
 - a. For slabs less than 6" thick, place fabric at mid-depth of slab, or slightly above mid- depth.
 - b. For slabs 6" or more in thickness, place fabric a minimum of 2" below surface, and a maximum depth equivalent to 1/3 of slab thickness.
2. Do not carry reinforcing fabric continuously through construction joints, but continue to within 2" to 4" of joints and edges of slab.

F. INSERTS AND FASTENING DEVICES

1. Provide and place all anchors, inserts, ties, hangers, blocking and other fastening devices required for general construction.

G. SLUMP

1. Determine the slump in accordance with latest ASTM standards, generally

between 3" and 4". Do not change slump for any class of work without the consent of the Architect. Make slump tests at job site for each 5-yard batch, or as may be directed by VMI's Physical Plant .

H. PLACEMENT OF CONCRETE

1. Clean-cut vertical trenches may be used in lieu of form boards below grade. Cut bottom of footing trenches level. Do not refill trenches that have been cut too deeply with earth fill, unless approved by VMI's Physical Plant .
2. Convey concrete from mixer to place of final deposit by methods that will prevent separation or loss of materials. Deposit concrete in forms within 1 hour after adding mixing water.
3. As nearly as practical, deposit concrete in its final position to avoid segregation due to re- handling or flowing. Do not use concrete that has been contaminated or re-tempered.
4. Once begun, carry on the placing as a continuous operation until placement of a panel or section is completed.
5. Bring surfaces that are to be finished to proper grade, strike off and finish in a workmanlike manner. No honeycombing, rough spots or protruding stones shall be left exposed.
6. Mixing, placing and curing to be in accordance with ACI Standard 301 and Standard 318.
7. Obtain approval from VMI's Physical Plant for location of all construction joints and their disposition in each instance. Key all joints between pours.

I. PLACING CONCRETE SLABS

1. In general, pour floor slabs in panels not to exceed 900 sf, with pour joints located as approved by VMI's Physical Plant. Pour joints straight and true by pouring directly against previously poured and set concrete. Key all joints in accordance with detail on drawings and do not extend reinforcing between panels.
2. Deposit concrete between screeds to finished floor levels. Screed with a straight edge and leave no hollows or pockets on surface. Tamp concrete with float to compact and densify surface.
3. Finished slabs to have a tolerance of 1/8" in 10'-0" when tested with a level straight edge.
4. Pour all interior slabs-on-grade over a 4" layer of stone, 1" of rolled sand, and a 6 mil. polyethylene vapor barrier lapped 6" and turned up to top of slab at the edges, unless otherwise noted.

5. Provide a building paper or PVC "Bond Breaker" to separate all newly poured slabs from adjacent masonry walls, and/or where indicated on drawings.
6. Provide a smooth, troweled finish to all other interior slabs. Strike off surface true and level with a screed and remove all laitance, dirt and surface water. Float surface to final grade with a wood float. Finish with a steel trowel after concrete has sufficiently hardened to prevent excess fine materials from being worked to surface. Finish surface to be smooth, uniform and free of trowel marks.
7. Apply one coat of sealer to all exposed interior concrete slabs not scheduled to receive other finishes. Apply sealer according to the manufacturer's directions, with not more than 400 sf per gallon.

J. PROTECTION AND CURING

1. Protect concrete against frost and rapid drying, and keep moist for at least six days after placing. During this period, maintain the concrete above 70°F for at least three days or above 50°F for at least five days.
2. Concrete from which forms are removed within 6 days after concreting, and cement finishes, require spraying during the curing period as frequently as drying conditions dictate.
3. Cover cement finishes with mats, waterproof paper, or other approved membrane 24 hours after finishing, and maintain in good condition until installation of permanent floor covering, or until directed. Use covering materials that will not stain or discolor finished concrete surfaces.
4. Instead of the above curing method, the Contractor may apply a curing agent. Use "Kure-N- Seal" by Sonneborn-Contech, or approved equivalent, meeting ASTM C-309, Type I, and apply immediately after finishing concrete in accordance with manufacturer's labeled instructions. Do not use a curing compound, which inhibits bonding of resilient or other finish flooring.
5. Do not use curing compounds on surfaces against which additional concrete, waterproofing membrane, or other materials are to be bonded.
6. Contractor shall, by whatever means necessary, protect all concrete from damage by weather and vandalism. If concrete is damaged it will be replaced at the Contractor's expense.

K. REMOVING FORMS AND PATCHING

1. Do not remove forms until concrete has thoroughly hardened. Carefully remove forms to prevent damage to concrete.

2. Do not remove clamps until concrete has sufficiently hardened to permit tie rods to be drawn or snapped without damaging concrete. Do not cut back ties from face of wall.
3. Immediately after removing forms, inspect all concrete surfaces and patch any poor joints, voids, honeycombs and tie holes at once, before concrete is thoroughly dry. If necessary, mix some white cement with gray to give patch the proper color match. Keep patches wet for at least 7 days.

L. CONCRETE MIX USAGE

1. Unless otherwise specified or noted on the drawings, use the following concrete classification:
 - a. Class "A" Mix - 4,000 psi.
 - b. Slabs-on-grade.
 - c. Structural concrete, including self-supporting floors, reinforced concrete walls, beam, columns, piers.
 - d. Sidewalks.
 - e. All structural footings.

M. CONCRETE FOUNDATIONS FOR EQUIPMENT

1. This section includes concrete pads required under items of mechanical, electrical, plumbing and other equipment shown on the drawings as being by the Contractor.
2. See plumbing, mechanical and electrical sections of these specifications, and plumbing, mechanical and electrical drawings for size, design and location of equipment requiring concrete pads and foundations.
3. Use same type of concrete as that specified for floor slabs, with a smooth, integral finish. Provide steel reinforcing in concrete foundations as indicated on the drawings.
4. Set bolts, anchors, piping, etc., in concrete as required by manufacturer of equipment. Templates or setting diagrams, as necessary, will be furnished by various trades of equipment manufacturers.

N. SIDEWALKS

1. Sidewalks shall be one course construction, 6" in thickness, except vehicles accessible sidewalks which shall be of thickness shown on drawings. Provide ½" expansion joints not more than 20 feet apart. Provide expansion joints where sidewalks abut curb and gutter. Pre-molded expansion strips shall extend for the full width and depth at required locations. Walks shall be scored at five (5) foot intervals for their full width and to a depth of at least 1/3 walk thickness. Provide

brushed finish. All walks shall be reinforced with one layer of WWF6X6, W1.4XW1.4, broken at all joints. The use of fibercrete is an approved equivalent.

2. When a sidewalk is poured adjacent to curb and gutter, expansion joints, if practical, shall coincide.
3. When replacing concrete in sidewalk cuts, dowel and pin new concrete to existing, adjacent slab with #5 rebar. Rebar to extend into adjacent slab 6", and shall be 1' on center.
4. All walks to be protected from vandalism until concrete is completely set. Any damaged concrete will be replaced by the contractor at no charge to VMI.

O. WEATHER

1. All concrete poured in cold weather or between the dates of November 1 & April 1 shall be poured in accordance with the Virginia Department of Highways and Transportation limitations "cold weather concrete" and shall be protected according to these specifications. Before any concrete shall be poured, necessary material for protection of this concrete shall be on the site.
2. The contractor shall be responsible for the quality of concrete placed in any weather or atmospheric condition.

P. TESTING

1. Make 1 batch of 6 test cylinders for each 50 yards or fraction thereof in each day's pour, in accordance with the latest ASTM specifications.
2. Cure cylinders under the same general conditions as the concrete they represent. Test 2 cylinders for each batch at 7 days, 2 cylinders at 28 days, and 2 at 56 days, or as indicated by VMI's Physical Plant.
3. Use only a reputable laboratory to conduct testing, and submit 3 copies of all reports to VMI's Physical Plant.
4. Maintain a log identifying the exact location of poured concrete represented by each set of test cylinders. Inform the testing laboratory of location, for designation on test reports.
5. The Owner reserves the right to have additional concrete test cylinders made and tested at his expense.
6. If concrete represented by any test cylinder fails to meet required strength, replace or strengthen concrete as directed by VMI's Physical Plant at no additional cost to the Owner.

ADDITIONAL REQUIREMENTS FOR
ASPHALT CUT AND PATCH

1. WORK INCLUDED

- A. Contractor shall include the furnishings of all labor, materials, equipment and services for, and reasonably incidental to, the completion of all asphalt work including all accessories necessary to complete work indicated by contract documents.

2. STANDARDS AND CODES

- A. Contractor shall comply with the latest editions and sections of all Federal, State and Local regulations applicable to this work.

3. GENERAL REQUIREMENTS AND PROCEDURES

- A. Backfill material shall include a minimum of four (4") inches bedding materials (sand or #57 stone). The balance of the backfill shall be approved soil compacted to the bottom of sub-base layer (Type I, size 21A or 21B). The entire backfill shall be free from wood, decaying materials, asphalt, concrete, ice, frost, large clods, stone and debris.
- B. Backfill material shall be compacted to a minimum of 95% of theoretical maximum density at optimum moisture content, use mechanical tamping throughout the depth of the trench in six (6") inch layers to insure that adequate support is provided for the sub-base layer (type I, 21A or 21B).
- C. Cuts in roads with Surface Course (SM) and Asphalt Concrete Base (BM) shall be replaced with ten (10") inches of Type I, Size 21A or 21B aggregate compacted 100% of the theoretical maximum density at optimum moisture content covering the entire trench width in addition to a bench of six (6") inches from all sides, this layer shall serve as sub-base. An asphalt concrete base course (BM) of six (6") inch minimum thickness or match the existing base thickness, shall be placed over the sub-base. A surface asphalt concrete course of a minimum of 1.5" (SM) shall be placed on top of the base (BM) covering the trench width. The asphalt concrete surface course shall be slightly higher (1/8" - 1/4") than the existing surface to provide a smooth grade into the existing pavement surface.
- D. Cuts in surface treated roads with aggregate base course shall be replaced with the same layers as roads with asphalt base (BM) except the sub-base layer (Type I, Size 21A, 21B) is reduced to six (6") inches and the (BM) layer to four (4") inches but still keeping a six inch bench. The surface course shall be a surface treatment matching the existing surface.
- E. The cut to be backfilled shall be made as dry as practicable at the time of backfilling by pumping, bailing, draining, or other approved dewatering methods.
- F. All cut sides shall be trimmed to neat straight lines and a track cost shall be applied at a rate of 0.05-0.15 gallon per square yard of RC-250 or CAE-2 before placing the plant mix.

- G. Replacement of pavement shall be from edge of pavement to edge of pavement except when individual cuts are made and not covering the entire width of the pavement.
- H. Placement of all asphalt concrete and surface treated courses shall be rolled where possible with a unit having a manufacturer's rating of ten (10) tons, and rolled until the aggregate is keyed in to the bitumen. When rolling is not possible, a mechanical tamp will be used. In all cuts stone is to be placed in the trench daily, at which time the pavement shall be covered with a temporary or permanent asphalt patch. If the application of the bituminous layer is delayed for adverse weather conditions, the contractor shall provide and maintain a base course that is acceptable until such time as the appropriate pavement patch can be applied.
- I. Contractor shall be responsible for any depression greater than $\frac{1}{4}$ " that occurs within one (1) year of completion of patching. Correction shall consist of milling and replacing 1.5" of surface course mix (SM).
- J. It shall be the option of the resident engineer to request and review the backfill compaction test results and/or authorize an inspector to monitor the compaction.

ADDITIONAL REQUIREMENTS FOR
FIRE SYSTEMS CONTRACTORS

1. WORK INCLUDED

- a. The contractor shall furnish all labor, supervision, materials and equipment for the completion of all work described on the drawings and in the general specifications. Drawings and specifications will be provided for individual projects as needed.
- b. These requirements are designed to indicate quality of work by the Institute and to specify materials generally found in fire system repairs.
- c. Special installation and material requirements listed on the drawings or in the general specifications shall take precedence over these requirements. Contractor shall provide all materials and equipment required to provide the Institute with safe, operable, and legal fire systems.

2. STANDARDS AND CODES

- a. All fire systems and equipment shall be installed in accordance with the latest adopted standards of the National Fire Protection Association (NFPA). All work shall also comply with the applicable state and municipal laws and codes covering each class of work.
- b. All material shall conform to the latest issue of all applicable standards as established by the NFPA and Underwriters' Laboratory (UL). All equipment and material shall bear approved labels where intended.
- c. All work shall conform to the Virginia Uniform Statewide Building Code.

3. SHOP DRAWINGS

- a. Submit shop drawings on the following, if other than specified, for approval. Project Manager will review and take action on submittals.
 - i. Water supply and distribution
 - ii. Device and fixture materials
- b. Contractor must include SDS and technical data sheets with submittals as appropriate.

4. MATERIALS AND EQUIPMENT STANDARDS

- a. All materials and equipment shall be new and in first class condition, unless otherwise specified, and shall conform to grade, duty, quality, and standards here in after specified.
- b. Before placing orders for materials and equipment to be furnished, the Contractor shall satisfy himself and determined that equipment will properly fit in allocated spaces with proper area allowed for servicing. If the contractor finds specified materials that will not operate or fit properly, he shall immediately notify the Project Manager.

5. WORKMANSHIP

- a. The work shall be executed in the best and most workmanlike manner by qualified, careful, and efficient installers in strict accordance with the specifications and drawings and be supervised by qualified master installers.
- b. Work required to be accomplished shall include, but not be limited to, the following:
 - i. Repair and/or replacement of fire system piping and components.
 - ii. Repair of walls, ceilings, and/or floors accessed to conduct repairs and/or replacements.
 - iii. Materials and equipment designed for the purpose.
 - iv. All fire system infrastructure and components.
 - v. All other work generally associated with fire safety.

6. METHODS

- a. All work methods will be done in accordance with applicable NFPA and building codes.
- b. All work will be coordinated with the Physical Plant's Fire & Safety office or their designee.

7. FIXTURES

- a. Special equipment and materials will be specified in the special condition equipment and material requirement of the general project specifications.
- b. All devices and fixtures shall be new, constructed of approved materials, with smooth, impervious surfaces, free from defects and fouling surfaces and shall conform to standards cited in applicable NFPA and building codes.
- c. All wall penetrations shall be fire caulked with the appropriate level of retardant.

8. LABELING AND IDENTIFICATION

- a. Identification of pipes and valves shall conform to applicable NFPA and building codes and to VMI's standards including:
 - i. All pipes
 - ii. All controls
 - iii. All valves
- b. Identification methods
 - i. Brass tags: All tags shall be 1 ½" or larger brass tags with depressed black filled numbers ½" or larger. Fasten tag to valve with "s" hook or brass jack chain.
 - ii. Prepare typewritten valve directories showing valve number, location, type of service and equipment controlled and normal position of valve. Frame directories under 1/8" thick clear plastic and mounted as directed.
 - iii. All control switches, gauges, shall be identified with a machine engraved plastic nameplate. Labels shall be secured in place with screws or epoxy.
 - iv. Color coded tape pipe markers with flow arrows shall be applied within 12" of each pipe hanger and additional markers shall be applied as to permit reasonable visual identification of each visible pipeline from access doors, shaft openings, removeable ceiling panels, and other points of inspection. Pipe markers (or stencils) with name, and color-coded tape arrows shall be located near valves, at points where pipes penetrate wall, floors, and ceilings. Pipe markers shall be neatly arranged and shall be applied squarely after pipelines are insulated and/or painted.
 - v. Pipe markers are not required on small equipment connections where identification is obvious.
 - vi. Pipe markers are not to be installed on exposed piping in furnished public spaces.
 - vii. Pipe markers are required in mechanical rooms and above ceilings.
 - viii. The contractor shall submit sample markers and schedule of lettering and colors to the project manager for review and approval.

9. PENETRATION OF RATED WALLS AND FLOORS

- a. Where holes are required for the passage of piping or wiring and where such holes are not already provided or are improperly located to suit the needs cut the necessary holes upon the approval of and as directed by the Physical Plant. These holes shall be true smooth circles, sawed, drilled or reamed to the smallest practical diameter as required.
- b. All openings created by the contractor and surfaces damaged by the contractor shall be patched and refinished to original condition.
- c. All partitions and floors with fire rating shall be patched and repaired in a manner that will not reduce rating of partitions or floors.

10. TESTING

- a. Testing of all systems shall be done in the presence of the project manager.

11. CLEAN-UP

- a. Touch up and restore any damaged finish. Touch up may require repainting entire surface.
- b. Properly dispose of any materials that may be considered hazardous waste.

ADDITIONAL REQUIREMENTS FOR
ELEVATOR INSPECTIONS

1. WORK INCLUDED
 - a. The contractor shall furnish all labor, supervision, materials and equipment for the completion of all elevator inspections.
 - b. These requirements are designed to indicate quality of work by the Institute.
2. STANDARDS AND CODES
 - a. All elevator systems and equipment shall be inspected in accordance with the latest adopted standards of the Virginia Maintenance Code and National Fire Protection Association (NFPA). All work shall also comply with the applicable state and municipal laws and codes.
3. MATERIALS AND EQUIPMENT STANDARDS
 - a. All materials and equipment shall be new and in first class condition, unless otherwise specified, and shall conform to grade, duty, quality, and standards here in after specified.
4. WORKMANSHIP
 - a. The work shall be executed in the best and most workmanlike manner by qualified, careful, and efficient testers in strict accordance with the specifications and drawings and be supervised by qualified individuals.
5. METHODS
 - a. All work methods will be done in accordance with applicable NFPA and building codes.
 - b. All work will be coordinated with the Physical Plant's Chief of Maintenance & Operations or their designee.
6. TESTING
 - a. Testing of all systems shall be done in the presence of the Chief of Maintenance & Operations or their designee.
 - b. An elevator inspection sheet must be provided for each elevator system. It shall include:
 - i. Date
 - ii. Location
 - iii. Pass/Fail
 - iv. Elevator information such as, but not limited to, S/N, make, type, capacity, speed, etc
 - v. List of deficiencies if they exist
 - vi. Comments as required

ADDITIONAL REQUIREMENTS FOR
SOLAR PANEL DESIGN, MANUFACTURING & INSTALLATION SERVICES

Objective. Contractor shall provide a total “turnkey” project including all necessary equipment, materials, design, manufacturing, and installation services for the installation of a [Roof-Mounted, Ground-Mounted, and Carport-Mounted Grid-Tied PV System] utility-interactive photovoltaic (PV) system. The contractor should prepare a system summary detailing each location, applicable equipment/size, and predicted system energy production (kWh). With regard to any building-mounted system, the contractor shall evaluate roof conditions and may remove the existing roof system and replace it with either an integrated roof/PV system or a new roof with a PV system installed. See roofing specification for these requirements. The project shall meet all requirements of this statement of work and other specifications included that apply.

Scope. The contractor shall perform all professional services as necessary to provide Virginia Military Institute with a complete design package, including the requirements outlined in this statement of work. The contractor shall install the project such that it is operational and compliant with all applicable standards, building codes, utility interconnection requirements, and Virginia requirements. The contractor shall include specifications, calculations, and drawings in the design package and submit it to VMI Construction Office for review and approval. After approval by Virginia Military Institute of the final design package, the contractor shall provide all necessary construction services to successfully complete the PV system installation.

Design Guidelines for [Roof Mounted, Ground Mounted, and Carport].

Design Guidelines for Rooftop PV. Contractor shall develop a design for a new PV system at [LOCATION]. See attached drawings indicating available areas for installation and existing roof structure plans. These drawings are meant for informational purposes only and must be field-verified by the contractor.

- The mounting system shall minimize roof penetrations and may include building-integrated roof PV or fully ballasted. The mounting system design needs to meet applicable local building code requirements with respect to snow, wind, and earthquake factors.
- Conduit penetrations shall be minimized.
- If the system is not building-integrated or membrane-sealed, the system shall be fixed-tilt (minimum 5-degree tilt for flat roof or flush mounted for sloped roof) with an orientation that maximizes annual energy production.
- All roof access points shall be securely locked at the end of each day.
- The system layout shall meet local fire department, code, and ordinance requirements for roof access.

Design Guidelines for Ground-Mounted PV. The contractor shall develop a design for a new PV system at [LOCATION]. See attached drawings indicating available areas for installation. Not all locations need to be used. It is the responsibility of the contractor to assess site topography and review geotechnical report to estimate costs related to project installation. The entity will provide geotechnical report as part of this request for proposal

- The mounting system shall be either directly anchored into the ground (driven piers, concrete footers, etc.) or ballasted on the surface without ground penetration. The mounting system design needs to meet applicable local building code requirements with respect to snow, wind,

and earthquake factors.

- Panels' orientation or azimuth shall be within 20–30 degrees of due south.
- Panels' tilt shall be based on site latitude and wind conditions.
- Ground cover and vegetation management shall be included in the proposal.
- The stormwater management and erosion control management plan shall be included in the proposal.
- OPTIONAL. Chain link fencing and gate shall be included in the proposal.
- All lines interconnecting PV arrays to the point of interconnection (POI) shall be underground.

Design Guidelines for Carport PV. The contractor shall develop a design for a new PV system at [LOCATION]. See attached drawings indicating available areas for carport installation. Not all locations need to be used. It is the responsibility of the contractor to assess site topography and geotechnical attributes to estimate costs related to the project installation.

- Carport PV shall be tilted at a minimum of 5 degrees to allow for drainage and reduce soil buildup.
- The carport PV shall be at least 9 ft clear in all locations.
- Lighting shall be provided under each carport. This lighting shall be efficient (e.g., light-emitting diode, LED) and allow for adjustable times for illumination with photocell controls to turn the lights on at dusk and off in the morning prior to daylight.

All lines interconnecting PV arrays to the POI shall be underground.

Performance Criteria. The following performance criteria shall be met for all arrays:

- The power provided shall be three-phase compatible with the on-site distribution system. Winning bidder will be required to submit design drawings stamped (by a licensed professional engineer) specifying connection voltage and location.
- The proposal shall provide an estimated energy delivery for each array, for each month of the year, and for the total for the year at the delivered voltage.
- The standard test condition (STC)-rated power value, slope, and orientation will be entered into PVWatts (<http://pvwatts.nrel.gov/>) using the nearest weather file to determine estimated energy delivery in kWh AC. A default value for the system losses of 14% shall be used.
- The PV array shall mean one or more PV modules having the same orientation and on the same maximum power point tracking (MPPT) system. Every array with differing orientation shall have a separate MPPT system.
- All proposed/implemented PV array locations shall be shade-free from 9 a.m. to 3 p.m. (solar time). The contractor shall provide documentation of shading calculations for exterior extents for each proposed array. These calculations may be modified for shading obstructions that will be removed and mitigated as part of the project. Suggested documentation would include sun path diagrams for exterior array locations or SunEye measurements.
- All PV hardware components shall be either stainless steel or aluminum. PV structural components shall be corrosion-resistant (e.g., galvanized steel, stainless steel, composites, or aluminum).
- The project, including supports and power conductors, shall not interfere with roof drains, water drainage, expansion joints, air intakes, existing electrical and mechanical equipment, existing antennas, and planned areas for future installation of equipment

shown on drawings.

Production Metering. The project shall have at least one production meter at POI of the building.

Construction. Contractor (unless otherwise noted by Virginia Military Institute) shall perform all construction services necessary for the successful installation of the system based upon the design generated

Technical Requirements and Reference Materials

- **Code Compliance.** The installation and equipment shall comply with applicable building, mechanical, fire, seismic, structural, and electrical codes. Only products that are listed, tested, identified, or labeled by Underwriters Laboratories (UL), Factory Mutual (FM), Electrical Testing Laboratories (ETL), or another nationally recognized testing laboratory shall be used as components in the project. Non-listed products are only permitted for use as project components when a comparable useable listed component does not exist. Non-listed products proposed for use as components must be identified as such in all submittals.
- The contractor shall use project components that are or made of materials that are recyclable, that contain recycled materials, and that are or ENERGY STAR® rated if they are available on the market.
- The publications listed below form a part of this document and are hereby incorporated by reference:
 - National Electrical Code (NEC)
 - UL 1703 Flat – Plate PV Modules and Panels
 - UL 1741 – Standard for Static Inverters and Charge Controllers for Use in PV Power Systems
 - FM Approved – Fire Protection Tests for Solar Component Products
 - International Electrotechnical Commission (IEC) 62446 Grid-Connected PV Systems – Minimum Requirements for System Documentation, Commissioning Tests, and Inspections
- Other technical codes that shall apply include:
 - American Society of Mechanical Engineers (ASME) Performance Test Codes (PTC) 50 (solar PV performance)
 - American National Standards Institute (ANSI) Z21.83 (solar PV performance and safety)
 - National Fire Protection Association (NFPA) 853 (solar PV systems near buildings)
 - Institute of Electrical and Electronics Engineers (IEEE) 1547 (interconnections)
 - American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI)-7 – ASCE – “Minimum Design Loads for Buildings and Other Structures”
 - National Roofing Contractors Association (NRCA)

Roles and Responsibilities

Contractor. The contractor is required to provide:

- Conceptual Design Drawings
- Construction documents and engineering calculations that are signed and sealed by a licensed architect or professional engineer in the appropriate discipline of the subject design drawings (e.g. architectural, geotechnical, electrical, structural)

- Submittals for materials and products
- Construction materials, equipment, and labor
- Design and construction supervision/contract management
- A quality control plan (QCP)
- A safety plan
- Inspections and tests (per QCP)
- Manuals (e.g., design calculations, operation/maintenance, a shop drawing, etc.)
- Commissioning of the project
- Mentoring and training of building operating staff for operation and maintenance
- Operation and maintenance during the first year and an optional service plan after the first year
- A web-based monitoring system for 20 years

Virginia Military Institute will:

- Provide information and facility site visits per the contractor's request
- Review for approval design submittals and QCP
- Witness inspections to verify attainment of performance requirements
- Make progress payments for design/construction as agreed

