

SELECTIVE ROOF REPLACEMENT

590-13-148

BUILDING 148

VA MEDICAL CENTER

HAMPTON, VA

SPECIFICATIONS

REDCO

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ROOF REPLACEMENT
BUILDING 148
VA MEDICAL CENTER
HAMPTON, VA

PROJECT 590-13-148

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SECTION 01 00 00
GENERAL REQUIREMENTS

1.1 GENERAL INTENTION

- A. Contractor shall completely prepare site for building operations, including demolition and removal of existing structures, and furnish labor and materials and perform work for ROOF REPLACEMENT BUILDING 148, DEPARTMENT OF VETERANS AFFAIRS MEDICAL CENTER HAMPTON, VA 23667 as required by drawings and specifications.
- B. A mandatory pre-bid meeting will be required for this project and held at the site. Contractors not attending the mandatory pre-bid meeting shall not be allowed to submit a bid for this project.
- C. Office of REDCO as Roofing Consultants will render certain technical services during construction. Such services shall be considered as advisory to the Government and shall not be construed as expressing or implying a contractual act of the Government without affirmations by Contracting Officer or his duly authorized representative.
- D. All employees of general contractor and subcontractors shall comply with VA security management program and obtain permission of the VA police, be identified by project and employer, and restricted from unauthorized access.
- E. Prior to commencing work, general contractor shall provide proof that a OSHA certified "competent person" (CP) (29 CFR 1926.20(b)(2)) will maintain a presence at the work site whenever the general or subcontractors are present. As a minimum, the competent personal will have the 30 hour OSHA Certified Construction Safety Course.
- F. Training:
 - 1. All employees of general contractor or subcontractors shall have the 10-hour OSHA certified Construction Safety course and /or other relevant competency training, as determined by VA CP with input from the ICRA team.
 - 2. Submit training records of all such employees for approval before the start of work.

1.2 STATEMENT OF BID ITEM(S)

- A. BID ITEM 1 (BASE BID); Contractor shall perform all work as indicated on the drawings, contract terms, and specifications including, roofing

demolition and new roof construction, alterations, roof drainage, overflow roof drainage, mechanical and electrical work, utility systems, construction and certain other items as indicated in the contract drawings and specifications for roof areas A, B, C, D, E, F, G, H and I. All work will be performed at the Veterans Administration Medical Center, Hampton, VA 23667.

1.3 CONSTRUCTION SECURITY REQUIREMENTS

A. Security Plan:

1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations.

B. Security Procedures:

1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
2. For working outside the "regular hours" as defined in the contract, The General Contractor shall give 3 days notice to the Contracting Officer. This notice is separate from any notices required for utility shutdown described later in this section.
3. No photography of VA premises is allowed without written permission of the COTR.
4. VA reserves the right to close down or shut down the project site and order General Contractor's employees off the premises in the event of a national emergency. The General Contractor may return to the site only with the written approval of the COTR.
5. All contract personnel are required to complete VHA Privacy Policy Training on an annual basis and provide documentation of such to the COTR. This training and certification can be completed through the Employ Education System (EES) at www.ees-learning.net. Go to the search option and enter the word "privacy". Do not hit enter, but select the search button. Click on the link to any of the FY09 VHA Privacy Policy Training modules to begin. When finished, you must

select the certificate link in order to print the certificate for the course completed.

C. Key Control:

1. The General Contractor shall provide duplicate keys and lock combinations to the COTR for the purpose of security inspections of every area of project including tool boxes and parked machines and take any emergency action.

D. Document Control:

1. Before starting any work, the General Contractor/Sub Contractors shall submit an electronic security memorandum describing the approach to following goals and maintaining confidentiality of "sensitive information".
2. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.
3. All paper waste or electronic media such as CD's and diskettes shall be shredded and destroyed in a manner acceptable to the VA.
4. Notify Contracting Officer and Site Security Officer immediately when there is a loss or compromise of "sensitive information".

1.4 FIRE SAFETY

A. Applicable Publications: Publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.

1. American Society for Testing and Materials (ASTM):
E84-2008.....Surface Burning Characteristics of Building
Materials
2. National Fire Protection Association (NFPA):
10-2006.....Standard for Portable Fire Extinguishers
30-2007.....Flammable and Combustible Liquids Code
51B-2003.....Standard for Fire Prevention During Welding,
Cutting and Other Hot Work
70-2007.....National Electrical Code
241-2004.....Standard for Safeguarding Construction,
Alteration, and Demolition Operations
3. Occupational Safety and Health Administration (OSHA):
29 CFR 1926.....Safety and Health Regulations for Construction

- B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to COTR for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the general contractor's competent person per OSHA requirements. This briefing shall include information on the construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, etc. Documentation shall be provided to the COTR that individuals have undergone contractor's safety briefing.
- C. Interim Life Safety Measures (ILSM): The contractor shall maintain a smoke tight/dust tight non-combustible separation between the occupied spaces and the roof area. Contractor shall take all measures necessary to prevent dust, debris and fumes from entering the building. Any work in the interior spaces shall be coordinated with the COTR and maybe required to be undertaken outside of normal work hours or at weekends.
- D. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.
- E. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings by distances in accordance with NFPA 241. For small facilities with less than 20 feet exposing overall length, separate by 10 feet.
- F. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.
- G. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with COTR.
- H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to COTR.
- I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.

- J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.
- K. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with COTR.
- L. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with COTR. Obtain permits from facility Program Manager, Fire Inspection Section prior to any hot work being performed. Designate contractor's responsible project-site fire prevention program manager to permit hot work.
- M. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas daily in accordance with ILSM and ICRA permit. Coordinate with, and report findings and corrective actions weekly to COTR.
- N. Smoking: Smoking is prohibited in and adjacent to construction areas, inside existing buildings and additions under construction. In separate and detached buildings under construction, smoking is prohibited. Smoking on facility grounds is permitted only in designated areas.
- O. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.
- P. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.
- Q. If required, submit documentation to the COTR that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

1.5 OPERATIONS AND STORAGE AREAS

- A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the COTR. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.
- B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the COTR and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work.

With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.

- C. The Contractor shall, under regulations prescribed by the COTR, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.
- D. Working space and space available for storing materials shall be as determined by the COTR.
- E. Workmen are subject to rules of Medical Center applicable to their conduct.
- F. Execute work so as to interfere as little as possible with normal functioning of Medical Center as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others.
 - 1. Do not store materials and equipment in other than assigned areas.
 - 2. Schedule delivery of materials and equipment to immediate construction working areas within buildings in use by Department of Veterans Affairs in quantities sufficient for not more than two work days. Provide unobstructed access to Medical Center areas required to remain in operation.
- G. The Contractor lay down area shall be determined at the mandatory pre-bid meeting by the COTR. The COTR will outline the limits of a specific location, to be maintained by the contractor for the contractor's use in performance of this contract.
- H. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, sewer, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by COTR.

1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of COTR. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without the Medical Center Director's prior knowledge and written approval.
 2. Contractor shall submit a request to interrupt any such services to COTR, in writing, 48 hours in advance of proposed interruption. For minor interruptions, request shall state reason, date, exact time of, and approximate duration of such interruption.
 3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of Medical Center. Interruption time approved by Medical Center may occur at other than Contractor's normal working hours.
 4. Major interruptions of any system must be requested, in writing, at least 15 calendar days prior to the desired time and shall be performed as directed by the COTR.
 5. In case of a contract construction emergency, service will be interrupted on approval of COTR. Such approval will be confirmed in writing as soon as practical.
 - I. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
 1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles. Wherever excavation for new utility lines cross existing roads, at least one lane must be open to traffic at all times.
 2. Method and scheduling of required cutting, altering and removal of existing roads, walks and entrances must be approved by the COTR.
 - J. Coordinate the work for this contract with other construction operations as directed by COTR. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.
- 1.6 TEMPORARY TRAFFIC CONTROL DEVICES**
- A. Provide and maintain temporary signs, barricades and other traffic control devices in accordance with MUCDT and VDOT Virginia work area

protection manual as necessary to protect personnel and new construction from damage by equipment and vehicles for all work around and/or involving roadways. Maintain traffic control devices until work is complete, operational and approved by the COTR.

1.7 INTERRUPTION OF VEHICULAR TRAFFIC

- A. If during the performance of work, it becomes necessary to modify vehicular traffic patterns at any locations, notify the COTR at least 15 calendar days prior to the proposed modification date. Provide a traffic control plan detailing the proposed modifications and controls to the COTR for approval. Make all notifications and obtain any permits required for modification to traffic movements outside station's jurisdiction. Provide cones, signs, barricades, lights, or other traffic control devices and personnel required to control traffic. Brightly-colored (orange) vests are required for all personnel working in roadways. One lane of traffic may be closed to conduct daily work operations in the roadway. Lane closure shall be limited to seven consecutive days. Do not use foil-backed material for temporary pavement marking because of its potential to conduct electricity during accidents involving downed power lines.

1.8 ALTERATIONS

- A. Survey: Before any work is started, the Contractor shall make a thorough survey with the COTR in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed by both, to the Contracting Officer. This report shall list:
 - 1. Shall note any discrepancies between drawings and existing conditions at site.
 - 2. Shall designate areas for working space, materials storage and routes of access to areas where alterations occur and which have been agreed upon by Contractor and COTR.

1.9 INFECTION PREVENTION MEASURES

- A. Implement the requirements of VAMC's Infection Control Risk Assessment (ICRA) team. ICRA Group may monitor dust in the vicinity of the construction work and require the Contractor to take corrective action immediately if the safe levels are exceeded.
- B. Establish and maintain a dust control program as part of the contractor's infection preventive measures in accordance with the

guidelines provided by ICRA Group. Prior to start of work, prepare a plan detailing project-specific dust protection measures, including periodic status reports, and submit to COTR for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

1. All personnel involved in the construction or renovation activity shall be educated and trained in infection prevention measures established by the medical center.
 2. It is the responsibility of the Contractor to provide TB training annually and a PPD test annually for any employees providing services at the VA Medical Center, Hampton, Virginia. We reserve the right to review the contractor's records.
- C. Medical center Infection Control personnel shall monitor for airborne disease (e.g. aspergillosis) as appropriate during construction. A baseline of conditions may be established by the medical center prior to the start of work and periodically during the construction stage to determine impact of construction activities on indoor air quality.
- D. In general, following preventive measures shall be adopted during construction to keep down dust and prevent mold.
1. Dampen debris to keep down dust.
- E. Final Cleanup:
1. Upon completion of project, or as work progresses, remove all construction debris from above ceiling, vertical shafts and utility chases that have been part of the construction.
 2. Perform HEPA vacuum cleaning of all surfaces in the construction area. This includes walls, ceilings, cabinets, furniture (built-in or free standing), partitions, flooring, etc.
 3. All new air ducts shall be cleaned prior to final inspection.

1.10 DISPOSAL AND RETENTION

- A. Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows:
1. Reserved items which are to remain property of the Government are noted on drawings or in specifications as items to be stored. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which

- would be detrimental to re-installation and reuse. Store such items where directed by COTR.
2. Items not reserved shall become property of the Contractor and be removed by Contractor from Medical Center.

1.11 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

- A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
- B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(FAR 52.236-9)

- C. Refer to Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS, for additional requirements on protecting vegetation, soils and the environment. Refer to Articles, "Alterations", "Restoration", and "Operations and Storage Areas" for additional instructions concerning repair of damage to structures and site improvements.
- D. Refer to FAR clause 52.236-7, "Permits and Responsibilities," which is included in General Conditions. The VA holds a National Pollutant Discharge Elimination System (NPDES) permit. The Contractor has extensive responsibility for compliance with permit requirements. VA will make the permit available at the VAMC Hampton GEMS office.

1.12 RESTORATION

- A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the COTR. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the COTR before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.
- B. Upon completion of contract, deliver work complete and undamaged. Existing work (lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.
- C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.
- D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2) of Section 00 72 00, GENERAL CONDITIONS.

1.13 AS-BUILT DRAWINGS

- A. The contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.
- B. All variations shall be shown in the same general detail as used in the contract drawings. To insure compliance, as-built drawings shall be made available for the COTR's review, as often as requested.
- C. Contractor shall deliver two approved completed sets of as-built drawings to the COTR within 15 calendar days after each completed phase and after the acceptance of the project by the COTR.
- D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.14 USE OF ROADWAYS

- A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the COTR, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.
- B. When new permanent roads are to be a part of this contract, Contractor may construct them immediately for use to facilitate building operations. These roads may be used by all who have business thereon within zone of building operations.

1.15 TEMPORARY TOILETS

- A. Provide (for use of all Contractor's workmen) ample temporary sanitary toilet accommodations with suitable sewer and water connections; or, when approved by COTR, provide suitable dry closets where directed. Keep such places clean and free from flies, and all connections and appliances connected therewith are to be removed prior to completion of contract, and premises left perfectly clean.

1.16 AVAILABILITY AND USE OF UTILITY SERVICES

- A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The Contractor shall carefully conserve any utilities furnished without charge.
- B. The Contractor, at Contractor's expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, and associated paraphernalia.
- C. Electricity (for Construction and Testing): Furnish all temporary electric services.
 - 1. Obtain electricity by connecting to the Medical Center electrical distribution system. Electricity is available at no cost to the Contractor.
- D. Water (for General Construction and Testing): Furnish temporary water service.

1. Obtain water by connecting to the Medical Center water distribution system. Provide reduced pressure backflow preventer at each connection. Water is available at no cost to the Contractor.
2. Maintain connections, pipe, fittings and fixtures and conserve water-use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at COTR's discretion) of use of water from Medical Center's system.

1.18 FINAL ELEVATION DIGITAL IMAGES

- A. A minimum of four (4) images of each elevation shall be taken with a minimum 6 MP camera, by a professional photographer with different settings to allow the COTR to select the image to be printed. All images are provided to the COTR on a CD.
- B. Photographs shall be taken upon completion, including landscaping. They shall be taken on a clear sunny day to obtain sufficient detail to show depth and to provide clear, sharp pictures. Pictures shall be 16 by 20 inches, printed on regular weight paper, matte finish archival grade photographic paper and produced by a RA4 process from the digital image with a minimum 300 PPI. Identifying data shall be carried on label affixed to back of photograph without damage to photograph and shall be similar to that provided for final construction photographs.
- C. Furnish six (6) 16 by 20 inch color prints of Building 148 constructed under this project (elevations as selected by the COTR from the images taken above). Photographs shall be artistically composed showing full front elevations. All images shall become property of the Government. Each of the selected six prints shall be place in a frame with a minimum of 2 inches of appropriate matting as a border. Provide a selection of a minimum of 3 different frames from which the COTR will select one style to frame all six prints. Photographs with frames shall be delivered to the COTR in boxes suitable for shipping.

1.19 HISTORIC PRESERVATION

Where the Contractor or any of the Contractor's employees, prior to, or during the construction work, are advised of or discover any possible archeological, historical and/or cultural resources, the Contractor shall immediately notify the COTR verbally, and then with a written follow up.

1.20 HAZARDOUS MATERIALS

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Where the Contractor or any of the Contractor's employees, prior to, or during construction work, are advised of or discover any possible hazardous material, the Contract shall immediately stop work in the area and notify the COTR verbally, with a written follow-up.

- - - E N D - - -

SECTION 01 00 10

ADDITIONAL CONDITIONS

PART 1 - GENERAL

1.1 DEFINITIONS

A. The contract document consists of the AGREEMENT, the GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS of the contract, the DRAWINGS and the SPECIFICATIONS, including all revisions hereto.

B. The Owner, Consultant and the Contractor shall be indicated as such throughout these documents. The term Contractor as used herein shall designate the successful bidder to whom the roof contract is awarded.

C. The term Owner shall be understood to be The Department of Veterans Affairs, Hampton, Virginia.

D. The terms Owner's Representative and Consultant shall be understood to mean the representative of the Consulting Firm representing the Owner, Roof Evaluation and Design Consultants, Inc. (REDCO). The term Owner's Representative and the term Consultant are used interchangeably throughout these documents and are considered to be the same.

1.2 OWNER'S REPRESENTATIVE STATUS

A. The Owner's Representative shall have general Rights of Inspection of the work and is the agent of the Owner in all matters pertaining to the work as provided in the Contract Documents. The Owner's Representative has the authority to stop work whenever such stoppage may be necessary to ensure the proper execution of the contract and shall have authority to reject any and all materials, whether worked or unworked, if such materials are not in accordance with the plans and specifications.

1.3 CONDITION OF SITE

A. The bidders shall visit the site before submitting their bids and determine the field conditions affecting their work. In considering the bids, the Owner will assume that the bidders are aware of all items, pertinent to their work and have made allowance for same in their bids.

1.4 VERIFICATION OF DIMENSIONS AND ELEVATIONS

A. Dimensions and elevations indicated on the drawings in reference to existing structures or utilities are the best available data obtainable but are not guaranteed by the Owner, Consultant or

Owner's Representative nor is the Owner's Representative responsible for their accuracy. Before bidding on any work dependent upon the data involved, the Contractor shall field check and verify all dimensions, elevations, overhangs, equipment and drain locations, grades, lines, levels or other conditions of limitations at the site to avoid construction errors. If any work is performed by the Contractor or any of his/her sub-contractors prior to adequate verification or applicable data, any resultant extra cost for adjustment of work as required to conform to existing limitations, shall be assumed by the Contractor without reimbursement or compensation by the Owner.

1.5 PROTECTION OF OWNER'S OPERATIONS

- A. The Contractor shall erect such barriers, tarpaulins, doors, etc., as may be necessary to protect the Owner's operations while work is in progress. Any such openings that are essential to carrying on the work shall be securely closed by the Contractor when not in use to protect the Owner's operations.
- B. The Contractor shall maintain water tight integrity of all roof areas during demolition and construction phases of this project. All through deck penetrations and exposed roof framing members shall be bedded with roof cement and sealed with hot asphalt.

1.6 PROTECTION OF WORK AND PROPERTY

- A. The Contractor shall maintain adequate protection of all his/her work from damage and shall protect the Owner's and adjacent property from injury or loss arising from this contract. He/she shall provide and maintain at all times any danger signs, guards and/or obstructions necessary to protect the public and his/her workmen from any dangers inherent with or created by the work in progress. He/she shall hold the Owner harmless from any loss arising due to injury or accident to the public or his/her workmen, or from theft of materials stored at the job site. All materials will be stored in locations other than on roof surfaces except as necessary and shall then be placed on plywood or other type of material to protect the roof surface at all times.
- B. Before starting any work, the Contractor shall protect all grounds, copings, paving and exterior of all buildings where work will be performed.
- C. In those areas where materials and/or hot asphalt will be raised to the roof area, a protective covering shall be placed from the base of the wall extending up and over the top edge of the roof. This coverage shall be wide enough to assure that the exterior walls do not become stained or soiled during roofing operations.
- D. Any areas of the building or grounds which have become stained or damaged in any way shall be repaired or replaced by the Contractor prior to the final inspections. The method of repair

used must be acceptable to both the Owner and the Owner's Representative.

1.7 MATERIAL STORAGE AND CLEAN-UP

- A. The Contractor shall keep the premises free from rubbish at all times and shall arrange his/her material storage so as not to interfere with the Owner's operations. At the completion of the job, all the unused material and rubbish shall be removed from the site. The ground shall be raked clean and the building shall be broom cleaned. If the Contractor refuses at any time to remove his/her debris from the premises, or to keep the working area clean, such cleaning will be completed by the Owner and deducted from the balance due the Contractor. The Contractor shall also remove dripage of bitumen or adhesive from all walls, windows, floors, ladders and finished surfaces. Failure to do so will result in the work being done by others and the cost shall be deducted from the balance due the Contractor. After twenty-four (24) hours of written notice by the Owner, the Owner shall back charge prime contractor for cleaning at a rate of not less than \$80.00 per man hour.
- B. Materials must be delivered with manufacturer's label intact and legible. Labels must be affixed to the outside of the package stating the type of product, name and address of the manufacturer. All materials shall be stored and protected against weather, vandalism, and theft. Any materials found to be damaged or missing shall be replaced by the Contractor at no cost to the Owner.

1.8 INSPECTION OF WORK

- A. Where the drawings or specifications require the inspection and approval of any work in progress by the Owner's Representative, the Contractor shall give that Representative ample notice to allow for scheduling the inspection, which shall be made promptly to avoid delay of work. If work has progressed without the required inspections or approval by the Representative, it shall be uncovered for inspection at the Contractor's sole expense.
- B. Uncovering of work not originally inspected, or uncovering questioned work may be ordered by the Owner's Representative and it shall be done by the Contractor. If examination proves such work to be incorrectly done or not done in accordance with the plans and specifications, the Contractor shall bear all cost of the reexamination. If the work is proven correctly installed, all such expense shall be borne by the Owner.

1.9 INSPECTION OF WORK IN PROGRESS AND UPON COMPLETION

- A. If directed by the Owner's Representative, the Contractor shall cut not more than four (4) cores, of approximately 200 square

inches each, from every newly constructed roof area, in order to establish the amount of materials used per square foot, and shall restore all such areas to sound and watertight conditions as prior to the core testing.

- B. In the event that such core cuts disclose any deficiency in materials, or soundness of construction, the Contractor shall, at his/her own expense, apply additional materials or otherwise correct the deficiencies to the satisfaction of the Owner's Representative.
- C. Noncompliance with the terms of this specification and ensuing contract can result in either the cancellation of the contract, or complete replacement of the defective areas at the Contractor's expense. In the event of cancellation, the Owner will not be obligated to compensate the Contractor for any work undertaken in a defective manner.
- D. Damages caused by water infiltration resulting from the failure of the Contractor to secure each day's work in a weather tight manner, will be corrected at the Contractor's sole expense. Included as damages will be all labor costs incurred by the Owner as a result of such water infiltration.
- E. The Owner will require the Owner's Representative to examine the work in progress, as well as upon completion, in order to ascertain the extent to which the materials and procedures conform to the requirements of these specifications and to the published instructions of the Manufacturer. Where the specifications and details are more stringent than the published instructions of the Manufacturer, the specifications shall be enforced and the Contractor shall perform all work as specified. The Consultant shall make the final decision as to how the work shall be installed and detailed.
- F. The authorized Owner's Representative shall be responsible for:
 - 1. Keeping the Owner informed on a periodic basis as to the progress and quality of the work;
 - 2. Calling to the attention of the Contractor those matters he/she considers being in violation of the contract requirements;
 - 3. Reporting to the Owner any failure or refusal of the Contractor to correct unacceptable practices;
 - 4. Conducting preliminary and subsequent job-site meetings with the Contractor's official job representative;
 - 5. Supervising the taking of test cuts, and overseeing the Contractor's restoration of such areas;
 - 6. Rendering any other inspection services which the Owner may designate;
 - 7. Certifying, after completion of the work, the extent to which the Contractor has complied with these specifications as well as to the published instructions of the Roof Systems Manufacturer.

8. The owner, at their sole discretion may require moisture surveying of any completed or partially completed roof section by means of Infra-Red Imaging as well as destructive core cut confirmation analysis. These moisture surveying services shall be performed by REDCO and if sub-surface moisture is found, the Contractor shall bear the cost of the survey and core cut analysis as well as be required to replace all areas where sub-surface moisture is detected. If no subs-surface moisture is detected, the owner shall bear the cost of the moisture survey and core cut analysis.
- G. The presence and activities of the Owner's Representative/Consultant shall in no way relieve the Contractor of his/her contractual responsibilities.

1.10 MISCELLANEOUS UTILITIES

- A. Electrical power will be furnished by the Owner for small tools only. All connections to the electrical system will be furnished by the Contractor.
- B. Water for concrete, mortar, washing and drinking purposes will be furnished by the Owner. Any connections to the water system shall be completed by the Contractor.
- C. At the completion of the work, or when the above connections are no longer required, the Contractor shall remove all connections and leave the facilities in a condition at least as satisfactory as prior to the commencement of his/her work.
- D. Toilet facilities will be provided by the Contractor. The Contractor will be responsible for supplying a portable toilet on the job-site. The Contractor's personnel are not permitted to enter the building without proper authorization from the Owner or Owner's Representative.

1.11 CHANGES OR EXTRA WORK

- A. The Owner may, without invalidating the original contract, order such changes or additions as may from time to time be deemed desirable. In so doing, the contract price shall be adjusted, as stated below, with all work being done under the conditions of the original contract except for such adjustments in extension of time as may be acceptable to the Owner. The value of such extra work shall be determined in one of the following ways:
 1. By firm price adjustment;
 2. By cost plus with a guaranteed maximum;
 3. By cost with a fixed fee; or
 4. By unit cost.

- B. If agreement is reached that the extra cost shall be handled as per methods 2, 3, or 4, the Contractor shall keep and compile a correct amount of the cost together with such vouchers, etc., as may be necessary to substantiate same for presentation to the Owner. The Owner's Representative shall have authority to make minor job changes or additions as may be necessary to expedite the job providing such changes do not involve additional material cost. No major change or addition shall be made except upon receipt by the Contractor of a signed order from the Owner authorizing such a change. No claims for an extra to the contract price shall be valid unless so authorized.
- C. All work covered by unit prices submitted by the Contractor in his/her proposal must be covered by a written work order. The Owner's Representative will prepare the work order in triplicate covering the quantity of work and the total cost of the work. The work order which will be written at the end of the each day will be signed by the Owner's Representative and the Contractor's foreman and/or superintendent.

1.12 CORRECTION OF WORK PRIOR TO FINAL PAYMENT

- A. The Contractor shall promptly remove any work that does not meet the requirements of the plans and specifications or is incorrectly installed or otherwise disapproved by the Owner or the Owner's Representative as failing to meet the intent of the plans and specifications. The Contractor shall promptly replace any such work without expense to the Owner and shall bear the cost of making good all work of other contractors, or the Owner, destroyed or damaged by such removal or replacement.

1.13 CORRECTION OF WORK AFTER FINAL PAYMENT

- A. The Contractor shall guarantee all materials and workmanship for three (3) years from date of final payment of the contract by the Owner. Any defects which may arise during this period shall be promptly repaired by the Contractor including any damage done to the Owner's property due to such defects.

1.14 DEDUCTION FOR UNCORRECTED WORK

- A. If the Owner deems it unacceptable to have the Contractor correct work which has been incorrectly done, a deduction from the contract price shall be agreed upon therefore. Such a deduction from the contract price shall in no way affect the Contractor's responsibility for defects which may occur nor his/her ability for correcting them, and damage caused by them.

1.15 LIENS

- A. The Contractor shall, if required by the Owner, furnish him/her with a release in full of all liens arising out of this contract or in lieu thereof, and receipts in full for all materials and labor on the job. In either case, the Contractor shall furnish an affidavit that the liens or receipts include all the labor and material for which a lien could be filed. In lieu of the above, the Contractor may at his/her option furnish a bond to indemnify the Owner against all hazards of liens. Neither part nor final payment shall in any way release the Contractor from the above obligation and in the event that part or full payment has been made and any lien remains un-discharged, the Contractor shall refund to the Owner the necessary funds to discharge such a lien including all cost and attorney's fees.

1.16 JOB CONDITIONS

- A. All surfaces to be covered shall be smooth, dry, and free from dirt, debris, and foreign material before any of this work is installed. The Contractor shall be responsible for guarding against fires, and shall provide suitable fire extinguishers conveniently located at the site. Competent operators shall be in attendance at all times equipment is in use. Materials shall be stored neatly in areas designated by the Owner and dispersed so as to present a minimum fire hazard. Loads placed on the roof at any point shall not exceed the safe load for which the roof is designed.
- B. There is NO tobacco use allowed on the Owner's property, including but not limited to: snuff, chewing tobacco, cigars, cigarettes, and pipes, and the Contractor shall be responsible for enforcement of this job rule at all times with his/her personnel. Violators are subject to expulsion from the Owner's premises for the duration of the project.
- C. The Contractor should be aware of Owner's property when removing any of the existing roof system components. This is required for removal of dirt, silt, debris, roof membrane and insulation from the roof surface in order to preserve the ecology, eliminate unsightly conditions and protect building surfaces. Specific locations will be discussed at the pre bid conference.
- D. Rolled Roofing Materials: All rolled roofing materials must be stored standing on end on a pallet or otherwise raised off of the roof. The materials are to be covered in a proper manner to assure that they will not become wet prior to application. Any materials that become wet or damaged must be removed from the job-site and replaced at the Contractor's expense.
- E. Asphalt Kettle: Placement of the kettle (If one is used) shall be in a position so as not to interfere with the ongoing operations of the Owner. The asphalt to be used must be placed on a protective covering of some type until it is raised to the

roof. A minimum of two (2) fire extinguishers and "Fire Out" must be adjacent to the kettle.

- F. Ladders: Any ladders used on this project must be in good condition. The ladder must also be secured at the roof line at all times while in use. All ladders must be O.S.H.A. approved.
- G. No drugs or alcoholic beverages are permitted on the grounds.
- H. The Contractor shall place necessary barriers and/or protection around or under all work areas where his/her operations involve risk of injury to plant personnel.
- I. The Contractor will also protect the building structure from damage in the process of the job. In the event that damage does occur to any property or equipment, or the Owner's work in process, notification must be made within two (2) working days of the incidents to the Owner and Owner's Representative.
- J. During the progress of the job, if waste material and rubbish are found or damage resulting from the Contractor's operations is found, or the Contractor does not comply with the requirement by keeping the premises free of accumulations of rubbish and debris and correct the damage, it shall be the Owner's prerogative to hire personnel to do so; and the cost of this work will be deducted from the balance due the Contractor.
- K. Existing roof top equipment walls, windows, etc. shall be completely protected by masking or other effective methods. Any mastics or asphalt must be cleaned off metal surfaces.
- L. The Contractor is responsible for protecting all materials from the elements. If any material, such as insulation, becomes wet, it cannot be installed and must be replaced at the Contractor's sole expense. NOTE: Insulation and rolled roofing materials must be covered with waterproof tarps at the end of each work day. Plastic wrappers supplied by the insulation manufacturer are not acceptable substitutes for tarps. The Owner's Representative will reject any covering method or material which does not adequately protect roofing materials.
- M. Anyone guilty of willful destruction or unlawful removal of company property will be dismissed from the job and is subject to prosecution by law.
- N. Any lawns damaged by Contractor vehicles will be restored with a stand of grass at the Contractor's expense. Any damaged pavements or over ground/underground utilities will likewise be restored and at the Contractor's sole expense.
- O. The Contractor must verify that all materials can be installed to accommodate the building design, pertinent codes and regulations, and the manufacturer's current recommendations.

- P. The Contractor will ensure that all substrates are clean, dry, sound, smooth, and free of dirt, debris, and other contamination before any materials are supplied.
- Q. Any isolated areas that must be torn off and replaced will be built-up to the height of the existing roof prior to the installation of the new roofing membrane system.

1.17 WORKMANSHIP

- A. All materials will be securely fastened and placed in a watertight, neat and workmanlike manner. All workmen shall be thoroughly experienced in the particular class or work upon which they are employed. All work shall be done in accordance with these specifications and shall meet the approval of the Owner and Owner's Representative. The Contractor's representative or job supervisor shall have a complete copy of specifications and drawings on the job-site at all times. If the Contractor's representative or job supervisor does not have a complete copy of the specifications and drawings on the job-site, the work will be stopped until a complete copy of the specifications and drawings is on the job-site.
- B. Contractor shall plan and conduct the operations of the work so that each section started on one day is complete and thoroughly protected before the close of work for that day.

1.18 ROOF DECK

- A. Contractor shall notify the Consultant of any unforeseen areas of unsuitable or damaged roof decking. Where the damage is serious and extensive, it will be the Consultant's prerogative to authorize removal and replacement of deteriorated decking. Where damage to the roof deck is found, the Contractor shall remove and replace unsuitable materials at the listed unit price for removal and replacement or repair of the damaged deck, listed on the bid form submitted by the Contractor.
- B. HOT WORK OPERATIONS
 - 1. Hot Work:
 - a. Hot work includes, but is not limited to, open flames and spark producing operations, welding, cutting, grinding, roof torches, etc.
 - 2. Hot Work Permits:
 - a. The Contractor shall be responsible for all hot work and hot work monitoring. The Contractor shall be responsible for coordinating hot work with the COTR.

- b. Hot work shall not be initiated until written approval from the Consultant has been provided to the Contractor.
 - c. The Contractor shall be responsible for complying with the NRCA/CERTA program, and ensuring all required precautions are met.
 - d. The Contractor shall be responsible for the hot work operations of their subcontractors, and shall monitor hot work operations conducted by their subcontractors.
3. Work Area:
- a. The Contractor shall inspect conditions listed on the Hot Work Permit, and as required.
 - b. The Contractor shall be responsible for inspecting the work area prior to beginning work. The Contractor shall notify the Consultant of unsatisfactory conditions, and ensure conditions are satisfactory to proceed with work.
 - c. Where roofing torch application is specified, and fire safe conditions cannot be assured by the Contractor, the Contractor shall notify the Consultant, Owner and the Manufacturer immediately to develop alternate methods of roofing material application to ensure fire prevention. Roofing operations shall not proceed when unsafe conditions are found.
 - d. The Contractor shall seal all building openings to prevent flames or burning debris from entering concealed spaces and building interior. All openings, roof deck joints, curbs, ducts, etc. shall be stripped or otherwise sealed and protected. Wood materials shall be protected as required to eliminate direct flame exposure from torch. Alternate methods of application are encouraged where fire prevention measures cannot be fully assured by the Contractor.
 - e. The Contractor shall disconnect air handling equipment in the hot work area as required to prevent smoke and flames from being pulled into the building and equipment. This shall be coordinated in advance with The Consultant before disconnecting equipment.
 - f. The Contractor shall remove all other combustibles from the hot work area. Remove all solvents, roofing adhesives, roofing cement, and all other flammable liquids from the hot work area.
4. Fire Watch:
- a. The Contractor shall provide fire watch personnel to closely monitor and inspect the work area and adjacent

areas for fires, smoldering materials, hot surfaces and smoke.

- b. The Contractor shall inspect and monitor the inside areas where hot work is being conducted, as well as any concealed areas between the roof deck and ceiling during and after hot work.
- c. The Contractor shall monitor conditions for the period of time specified by the Hot Work Permit, and as conditions dictate. The work area and adjacent areas shall be closely monitored by the Contractor for no less than one after hot work has ceased. The time period shall be recorded by the Contractor.
- d. The Contractor shall provide designated fire watch personnel to monitor interior conditions and exterior conditions during, and after, hot work operations.
- e. The Contractor shall be responsible for properly training and instructing fire watch personnel of their responsibilities and duties.
- f. Fire watch shall meet The Consultant's requirements as dictated by the Hot Work Permit Program.
- g. Contractor shall monitor the work area and building interior, and coordinate monitoring with The Consultant during roofing torch operations. Contractor shall ensure proper hot work procedures are maintained in all curbs, ducts, concealed spaces and building interior.

5. Roofing Torch Training:

- a. Roofing torch operators shall be trained in accordance with the current published requirements of the Certified Roofing Torch Applicator (CERTA) Program or accepted equivalent training. The CERTA Training Program may be obtained from NRCA/MRCA, 10255 W. Higgins Rd. Suite 600, Rosemont, IL 60018-5607.
- b. When required by the Owner during work, the Contractor shall be able to produce documentation indicating the torch operators have up to date certifications and training. The lack of such documentation will require untrained personnel to be replaced with trained personnel.

6. Roofing Torch Equipment:

- a. Torches shall not have pilot flames. The torch flames shall go out when the trigger is disengaged Torches shall be of the "dead-man" type "trigger on/trigger off operation."

- b. Equipment, valves, regulators, tanks, hoses and all associated equipment shall be properly stored and handled, and maintained as required by the respective equipment manufacturer and other applicable requirements.
- 7. Fire Prevention and Fire Safety:
 - a. Fire prevention and fire safety shall be the Contractor's responsibility. Contractor shall be responsible for developing a pre-fire emergency plan, coordinated with The Consultant to plan for fire emergencies.
 - b. It is the responsibility of the Contractor to enforce fire safety precautions and to ensure safety measures are followed at all times by the Contractor's and Subcontractor's personnel.
 - c. Contractor shall be responsible for maintaining sufficient fire suppression equipment, including fire extinguishers and a water hose that can reach all areas of the roof and work areas.

1.19 OWNER'S RULES

- A. The Contractor and all his/her personnel/agent(s) shall abide by all owners' rules, as specified in the contract documents and / or in owner's policies and / or procedures currently or established during the term of this contract.
- B. The Contractor shall properly notify all employees of conditions relating to roof areas with very poor condition and which will be worked on. After such notification, the Contractor must take all necessary precautions to ensure the safety of his/her employees as well as the building personnel.

1.20 SAFETY

- A. Contractor shall conform to requirements as designated by the United States Federal Government (O.S.H.A.). Contractor shall abide by all regulations as outlined in the O.S.H.A. handbook and shall have a handbook on location at all times. Contractors hereby acknowledged that they and their workers have undergone Safety Training and shall at all times act in compliance with all NRCA recommended safety compliance rules and regulations.

1.21 WORK HOURS AND DAYS

- A. When the bid is awarded, the Contractor will contact the Owner's Representative to arrange the work schedule and the hours of the day that the workmen may be on the building. The job is to be bid under the assumption that all work will be performed in such

a manner as to complete the project by the date indicated in the specifications, without disruption of the normal operation of the facility.

1.22 COMPLIANCE WITH LAWS

A. The Contractor shall give notices, pay all fees, permits and comply with all laws, ordinances, rules and regulations bearing on the conduct of work.

1.23 SAFETY AND ECOLOGY

A. The Contractor(s) shall conform to the requirements as designated by the United States Federal Governments (e.g., O.S.H.A.).

PART 2 - INSTRUCTIONS TO BIDDERS

2.1 QUESTIONS

- A. If the Contractor feels a conflict exists between what is considered good roofing practice and these specifications, he/she shall state in writing all objections prior to submitting quotations.
- b. It is the Contractor's responsibility, during the course of the work, to bring to the attention of the Owner's Representative any defective membrane, insulation or deck discovered which has not been previously identified.

2.3 RESPONSIBILITY FOR MEASUREMENTS AND QUANTITIES

A. The Bidding Contractors shall be solely responsible for all accuracy of all measurements and for estimating the material quantities required to satisfy these specifications.

2.4 DISCREPANCIES AND ADDENDA

- A. Should a Bidder find any discrepancies in the Drawings and Specifications, or should he be in doubt as to their meaning, he/she shall notify the Owner's Representative at once, who will send a written Addendum to all Bidders concerned. Oral instructions or decisions, unless confirmed by Addenda, will not be considered valid, legal or binding.
- B. No extras will be authorized because of the Contractor's failure to include work called for in the Addenda in his/her bid.

- C. It shall be the responsibility of all Bidders to call to the Owner's Representative's attention at the pre bid meeting, any discrepancies which may exist between or with any of the contract documents, or any questions which may arise as to their true meaning.

D. Modifications to the specifications (if necessary) will be followed by an addendum; no verbal discussions or agreements shall be recognized.

2.5 COMPETENCY OF THE BIDDER

- A. To enable the Owner to evaluate the competency and financial responsibility of a Contractor, all Bidders shall submit with his/her bid package, the required Roof System Manufacturer's Approved Applicator Agreement Letter.

2.6 DISQUALIFICATION OF BIDDERS

- A. Any one or more of the following causes may be considered sufficient for the disqualification of a Bidder and the rejection of his/her bid(s):
 - 1. Failure to attend the pre bid meeting if one is required;
 - 2. Evidence of collusion among Bidders;
 - 3. Lack of responsibility as revealed by either financial, experience or equipment statements, as submitted;
 - 4. Lack of expertise as shown by past work, and judged from the standpoint of workmanship and performance history;
 - 5. Uncompleted work under other contracts which, in the judgment of the Owner, might hinder or prevent the prompt completion of additional work if awarded; or
 - 6. Being in arrears on existing contracts, in litigation with an Owner, or having defaulted on a previous contract.
 - 7. Failure by Contractor to include all required bid documents when submitting his/her bid(s) for this project.

2.7 WARRANTY

- A. A written warranty which will commence from date of acceptance by Manufacturer must be supplied with the roof installation. This warranty will cover all defects in workmanship and materials. This warranty shall be for a period of Thirty -Years (30 Years), having a No Dollar Limit (NDL) for labor and materials necessary to repair or replace any defective roofing materials, insulations, flashings, structural supports for metal roofing and edge metals and a 100 MPH (Mile Per Hour) wind warranty. Damages caused by storm, vandalism and other trades are not included in the warranty. This warranty shall be from the roof systems manufacturer (See further, Statement of Policy).
- B. A three (3) year workmanship warranty is required from the Contractor to both the Owner and the Roof System Manufacturer for

any and all necessary repairs, replacements as well as all remedial maintenance done under the terms of this contract.

2.8 START AND COMPLETION DATE

- A. Work may begin upon issuance of notice to proceed. Work shall be completed by prior to the deadline established in the Invitation to Bid.
- B. All work as required in these specifications and drawings shall be completed by the completion date as indicated in these specifications.
- D. The Contractor is responsible for supplying trained workmen in proper numbers and for scheduling and laying out his/her work, so that it will be started and completed in a professional manner within the time period indicated on his/her Proposal Form.
- E. If the Contractor sets equipment or materials onto the job-site without commencing work immediately, the action will be considered "Spiking the job" which is unacceptable and will be considered a breach of contract by the Contractor; thereby, the contract will be terminated and the Contractor at no cost to the Owner, must remove his/her equipment and possessions from the job-site upon notification by the Owner.

2.9 PAYMENT

- A. Payment request shall be in accordance with the Owner's procurement policies and this specification. All requests for payment shall be in triplicate, itemized and presented to REDCO for review and approval. Approved payment request shall be forwarded to the owner for payment.

PART 3- CONTRACTOR'S INSTRUCTIONS

SPECIAL NOTICE TO CONTRACTORS:

The attention of the bidder is invited to the provision of Chapter II of Title, 54.1 of the Code of Virginia regulating the practice of general contracting under which it will be necessary for the bidder to show evidence of certificate of registration as provided by said code.

The Department of Veterans Affairs reserves the right to reject any or all bids.

3.1 TAXES

- A. Contractor must comply with all state, federal and local taxes. The Contractor shall accept sole and exclusive responsibility for any and all state and federal taxes with respect to Social Security, old age benefits, unemployment benefits, withholding taxes and sales taxes.

3.2 CONTRACTOR'S LICENSE

- A. All pertinent state and local licenses will be required.

3.3 QUALIFICATION OF BIDDERS

- A. Provide Manufacturer's Authorized Applicator Agreement Letter.

3.4 BUILDING PERMITS

- A. The acquisition of the applicable permits will be the responsibility of the successful Contractor. Contractor is to supply permits for but not limited to the following trades: Roofing, Asbestos Abatement and Removal, Plumbing, Carpentry, Mechanical and Electrical work.

3.5 JOB COORDINATION

- A. Contractor is responsible for daily communication with the Owner or Owner's Representative relating to areas of roof work in order that the Owner may adequately protect tenant's personal belongings, and the people themselves against possible damage or injury. Contractor is also responsible for policing and protecting areas involving removal and replacement of roof projections, defective decking or other work involving deck penetration.
- B. Twenty-four hours prior to starting of the project and/or delivery of materials, the Contractor shall notify the COTR

3.6 CLEAN-UP

- A. Accumulated debris shall be removed daily to assure maximum safety and sanitation at all times. At completion of work, the Contractor shall remove all excess material and debris from the site and leave all roof surfaces free from accumulations of dirt, debris and other extraneous materials. The Contractor shall also remove any and all dripage of bituminous materials from the face of the buildings, floor, window, ladders and other finished surfaces.

3.7 SUPERINTENDENT

- A. The Contractor shall keep a competent English Speaking superintendent, satisfactory to the Owner and Consultant, on the job at all times when work is in progress. The superintendent shall have a minimum of three years documented experience in the installation of the specified roofing

and insulation system. The Contractor shall provide documentation of the superintendent's experience to the Consultant at the Pre-Construction Meeting. The superintendent shall not be changed without notifying the Owner and Consultant. If the superintendent is changed, the same qualification process will be required of the new superintendent.

- B. The superintendent shall be responsible for the conduct of all the Contractor's employees on the premises and shall promptly take necessary measures to correct any abuses called to his/her attention by the Owner or Consultant.

3.8 INSPECTIONS

- A. Before any material applications are made, the Owner or the Owner's Representative and the Material Manufacturer's Technical Representative (not the Materials Manufacturer's Sales Representative) shall be available to ensure a complete understanding of the specification.

B. The accepted Material Manufacturer will have a Technical Representative who is a full time employee of the Material Manufacturer (not the Materials Manufacturer's Sales Representative) on site a minimum of every other week during the project to verify compliance with the specifications, answer questions that may arise and provide on-going inspection services. This representative must make his/her weekly inspection date/time known to the Consultant 24 hours prior to arrival at the jobsite and report findings to the Consultant.

- C. A final inspection shall be conducted by Owner, Contractor, and the Consultant and Manufacturer's Technical Representative upon being notified of completion of specified work and clean-up.

PART 4 - STATEMENT OF POLICY

4.1 GUARANTEES

- A. A roofing guarantee is available for review from the Material Manufacturer for the roofing systems published in these specifications. The guarantee will be issued only upon completion of all the guarantee requirements by an approved Contractor. Such guarantees cannot be altered or amended, nor may any other warranties, guarantees or representations be made by an agent or employee of the Material Manufacturer unless such alteration, amendment or additional representation is issued in writing and is signed by a duly authorized officer of the Material Manufacturer, and sealed with the Material Manufacturer seal.

The Contractor will warranty the roof to the Owner and Material Manufacturer for a period of three (3) years. The Contractor will inspect the roof with the Owner and Owner's Representative and Material

Manufacturer's Technical Representative 18 months after completion, and, at the Contractor's expense, correct any workmanship defects before the 36th month following completion of the project.

4.2 APPROVED CONTRACTORS

- A. The roof systems shall be applied only by those Contractors who have received written approval from the Material Manufacturer for such installations. Contractors shall provide with their bid, a Roofing System Manufacturer's Approved Applicator Agreement Letter. This Manufacturer's Approved Applicator Agreement Letter must include the date of the Contractor's Approved Applicator status. This agreement shall be signed by an Officer of the Roof System Manufacturer, not signed by a Roof System Manufacturer's Sales Representative or Sales Agent. No portion of the Roofing System or Roofing Insulation, Flashings, Terminations, Wall Coverings, Nailers, Copings or Edge Metal Applications shall be sub-contracted. All roofing related work shall be performed by the Contractor and their full time employees only. All Plumbing, Mechanical and Electrical work shall be performed by licensed, qualified, competent firms specializing in the specified scope of work.

4.3 ROOFING SEQUENCE

- A. The roofing sequence of roof areas to be replaced shall be outlined to the Contractor at the pre-construction meeting.

4.4 ACCEPTABILITY OF COMPLETED WORK

- A. The acceptability of completed roofing work will be based on its conformance to the contract requirement. The Consultant, Owner and Material Manufacturer are not obligated to accept non-conforming work, and such non-conforming work may be rejected. The rejected work shall be promptly replaced or corrected in a manner and by methods approved by the Consultant and Material Manufacturer at the Contractor's sole expense. The Consultant and the Material Manufacturer will instruct the Contractor's foreman and work crew on the proper methods of installation of the roofing system, and will follow-up on a regular basis to inspect the work being done. Any deficiencies from the specified work noted by the Material Manufacturer will be immediately reported to the Consultant, along with recommended corrective actions necessary. The Consultant, Material Manufacturer or Owner shall not act in a supervisory capacity, and will not be responsible for the Contractor's errors or omissions.

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SECTION 01 09 00- STANDARDS

PART I- GENERAL

1.01 Related Documents

The provisions of the Contract, the General Conditions, the Supplementary Conditions and Division I Specifications Sections, apply to the work in this section.

1.02 Industry Standards

Applicable standards of the construction industry have the same force and affect (and are made a part of the contract Documents by reference) as if copied directly or bound herewith.

AIA American Institute of Architects
 1735 New York Avenue, N. W.
 Washington, D.C. 29996

ASTM American Society for Testing and Materials
 1916 Race Street
 Philadelphia, Pennsylvania 19103

FM Factory Mutual Engineering Corporation
 1151 Boston-Providence Turnpike
 Norwood, Massachusetts 02062

NRCA National Roofing Contractor's Association
 8600 Bryn Mawr Avenue
 Chicago, Illinois 60631

SMACNA Sheet Metal and Air Conditioning Contractors National
 Association
 P.O. Box 70
 Merrifield, Virginia 22116

UL Underwriters Laboratories
 333 Pfingsten Road
 North Brook, Illinois 60062

1.03 Overlapping and Conflicting Requirements

Where compliance with two (2) or more industry standards, or sets of requirements are specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement which is generally recognized to be also most costly) is intended and will be enforced, specifically detailed language written into contract documents (not by way of reference to an industry standard) clearly indicates that a less stringent requirement if to be fulfilled. Refer apparently-equal-but-different

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requirements, and uncertainties as to which level of quality is more stringent, to the Consultant for a decision before proceeding.

PART II- PRODUCTS

Not Applicable

PART III- EXECUTION

Not Applicable

- - END - -

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SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

PROJECT IDENTIFICATION

The project name shall be "Selective Roof Replacement Project, Building 148" as shown in the contract documents.

The project is located at Building 148 Department of Veterans Affairs, Hampton, Virginia

WORK INCLUDED

The work covered by this contract shall include, but is not limited to the following:

For all low slope roof areas, remove existing roofing system components consisting of but not limited to gravel surfacing, membrane flashings, pitch pockets, edge metal and terminations. Examine existing roof deck and bring to the Consultant's attention any defective, deteriorated or unsuitable roof decking. Examine existing wood blocking at curbs, penetrations and perimeters and replace any unsuitable blocking with new blocking as per specifications and details. Raise all penetrations and curbs and sleeper curbs to be a minimum of 8" above finished roof surface.

For all low slope roof areas: Provide and install new tapered insulation system, nailers to match new insulation heights as per specifications and drawings. Provide and install new specified Wind Vented 80 Mil PVC Membrane Roofing System with specified flashing and terminations, per specifications and detail drawings. Provide and install new schedule 80 PVC conduit with 90 degree elbows for all mechanical and electrical through deck lines, per specifications and detail drawings. Provide and install new PMMA resin based flashings for all PVC through deck conduits and vent through roof pipes. Provide and install new overflow scuppers, piping and flanges per specifications and drawings.

The Contractor shall provide licensed, professional mechanical, electrical and plumbing contractors to perform all mechanical, electrical and plumbing disconnects and reconnects and re-routing. Provide all Electrical and Mechanical Disconnects and Reconnects as required to lift and reinstall existing HVAC units where necessary. Provide and install

new sleeper curbs for all HVAC units on wood sleepers, per specifications and drawings.

Provide and install new .050 aluminum counterflashing extensions, counterflashings, coated edge metals, new .050 aluminum fascia, new .050 aluminum overflow scuppers, piping and flanges , HVAC counterflashing and curb cap flashings, .063 aluminum continuous cleats, fasteners, membrane, sealants, terminations, wood blocking, per specifications and details.

For all low slope roof areas, clean and paint with rust inhibiting paint, all pipe penetrations, existing roof top ventilators, roof top ventilator hoods per specifications and drawings.

Provide and install new cast iron clamping rings, new stainless steel clamping ring bolts and washers and new drain strainers for all existing roof drains.

1.04 GENERAL ROOFING NOTES

1. The Roofing Contractor should fully understand that the Work includes the use of manufacturer's certified/approved installers (roofers) in order to obtain long term manufacturer's guaranty.
2. The division of Work among the various trades or subcontractors (if any) necessary and the coordinating of the total Work is the Contractor's responsibility.
3. The Roofing Contractor shall field verify existing dimensions and conditions as indicated on drawings.
4. Confine movements on Owner's property to areas designated at the pre-construction conference.
5. Materials are shown layered for clarity. Treatments are continuous. Materials are new unless otherwise indicated.
6. Principle openings through roof may not be shown. Contractor shall provide new flashings, curbs, etc., throughout to complete roof system.
7. Once a particular treatment is noted on a Detail or Roof Section, it will not be repeated on subsequent Details and Roof Sections.
8. New curbs shall be wood-faced.
9. Curb heights shall be 8" minimum from top of membrane to top of curb. Provide additional nailers to curbs under 8". Curb tops shall be level.
10. Fasteners to be mechanical fasteners or as indicated. Fasteners used in the work are to provide 1-inch penetration into the substrate or as required by the fastener manufacturer.
11. Flashings are to be provided in a water-shedding fashion.

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12. Should conditions exist that are not adequately detailed, inform the Owner's Representative and additional details/directions will be provided. Do not proceed without direction from the Owner's Representative

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

- - END - -

SECTION 01 14 00 - WORK RESTRICTIONS

PART 1 GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

USE OF PREMISES

The work shall be performed so as to not interfere with safe access to the building. Confine activities to the areas of work indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

Confine construction operations to roof areas and contractor staging areas indicated on Drawings and as directed by the Owner's Representative.

Work may be performed between the hours of 7:00 AM and 7:00 PM, Monday through Friday. Weekend work is permitted when approval is obtained in advance from the Owner and Owner's Representative and Consultant is notified in advance. No other hours of work will be allowed unless cleared by the Owner's Representative.

Keep driveways, sidewalks and parking areas cleared of materials and debris at all times. Isolate areas designated for loading and off-loading of materials and debris.

The Contractor shall protect surfaces to prevent damage to the structure, interior and exterior finishes, landscaping and vegetation, and will be responsible for repair of damage caused by construction operations to the satisfaction of the Owner.

The location of all of the Contractor's equipment, material at the ground level must be confined to the contractor staging areas as discussed at the pre-bid meeting.

There shall be no unauthorized access to the interior of the building.

Limited use of a crane is permitted on the site. Materials not loaded with a crane, must be lifted to the roof with a mechanical hoist.

Contractor shall access the roof with personnel and small materials from the outside of the building only; no interior building access is permitted for any reason.

Contractor shall not load roof with debris or roofing materials. Contractor shall not stage roofing materials on roof top areas.

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COORDINATION WITH OCCUPANTS

The Owner will occupy the site and building during the entire construction period. The Contractor shall coordinate activities to minimize conflicts and facilitate Owner usage. The Contractor shall perform all work so as to not interfere with the Owner's normal operations.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

- - END - -

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SECTION 01 27 00 - UNIT PRICES

PART 1 GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes administrative and procedural requirements for unit prices.

DEFINITIONS

A unit price is a price per unit of measurement for materials or services added to or deducted from the Contract Sum by Change Order, if estimated quantities of Work required by the Contract Documents, as part of the Base Bid, are increased or decreased.

1.03 PROCEDURES

Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit. No additional mark-ups or compensation will be paid by the Owner.

The Consultant and Contractor will jointly verify quantities prior to execution of unit price work.

Refer to individual Specification Sections for construction activities requiring the establishment of unit prices. Methods of measurement and payment for unit prices are specified in those sections.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

UNIT PRICE SCHEDULE

A. Refer to the Bid Proposal Page for Unit Price description and requirements.

- - END - -

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Conservation.
 - 3. Coordination Drawings.
 - 4. Administrative and supervisory personnel.
 - 5. Project meetings.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Work to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different efforts that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination.

Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
 2. Preparation of the Schedule of Values that will accompany the Request for Payment.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Project closeout activities.
 7. Provide list of all subcontractors with contact person and telephone numbers.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.

1.4 SUBMITTALS

- A. Staff Names: Within 15 days of starting construction operations, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
1. Post copies of list in the temporary field office, and by each temporary telephone.
- B. Daily Reports: The Contractor's project superintendent shall provide the Consultant and Owner with copies of his daily report on a weekly basis including manpower per trade, job progress, weather and activities.

1.5 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Consultant of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Consultant, within 3 days of the meeting.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Consultant, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. The Consultant will conduct the meeting to review responsibilities.
1. Attendees: Authorized representatives of Owner, Consultant, Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Any critical work sequencing.
 - c. Existing School Facility requirements.
 - d. Designation of responsible personnel.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for processing Applications for Payment with the Schedule of Values.
 - g. Distribution of the Contract Documents.
 - h. Submittal procedures.
 - i. Preparation of As-Built Documents.
 - j. Use of the premises.
 - k. Responsibility for temporary facilities and controls.
 - l. Parking availability.
 - m. Office, work, and fenced storage areas.
 - n. Equipment deliveries and priorities.
 - o. First aid.
 - p. Security.
 - q. Progress cleaning.
 - r. Working hours.
- C. Progress Meetings: Conduct progress meetings at bi-weekly intervals. Coordinate dates of end-of-the-month meetings with preparation of Applications for Payment.
1. Attendees: In addition to representatives of Owner and Consultant, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be

- represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Temporary facilities and controls.
 - 7) Hazards and risks.
 - 8) Quality and work standards.
 - 9) Change Orders.
 - 10) Documentation of information for Applications for Payment and distribution.
 3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

- - END - -

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SECTION 01330 - SUBMITTALS

PART 1 GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

This Section includes non-administrative submittals such as shop drawings, product samples, manufacturer's data and other related items. These submittals are in addition to such administrative items as Permits, Insurance Certificates, Schedule, Listing (Subcontractors, Suppliers and Fabricators).

PROCEDURES

Manufacturer's literature, certificates, color charts:

The Contractor shall submit six copies of the requested submittals to the Consultant at least 14 days prior to beginning work. The Consultant will process submittals within 7 days of receipt.

Submittals shall be clearly marked with the Project name and clearly show which portions of the contents are being submitted for review. The submittal shall be organized into a single submittal package with an index of the items included.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

- - END - -

SECTION 01 33 23
SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- 1-1. Refer to Articles titled SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FAR 52.236-21) and, SPECIAL NOTES (VAAR 852.236-91), in GENERAL CONDITIONS.
- 1-2. For the purposes of this contract, samples, test reports, certificates, and manufacturers' literature and data shall also be subject to the previously referenced requirements. The following text refers to all items collectively as SUBMITTALS.
- 1-3. Submit for approval, all of the items specifically mentioned under the separate sections of the specification, with information sufficient to evidence full compliance with contract requirements. Materials, fabricated articles and the like to be installed in permanent work shall equal those of approved submittals. After an item has been approved, no change in brand or make will be permitted unless:
 - A. Satisfactory written evidence is presented to, and approved by Contracting Officer, that manufacturer cannot make scheduled delivery of approved item or;
 - B. Item delivered has been rejected and substitution of a suitable item is an urgent necessity or;
 - C. Other conditions become apparent which indicates approval of such substitute item to be in best interest of the Government.
- 1-4. Forward submittals in sufficient time to permit proper consideration and approval action by Government. Time submission to assure adequate lead time for procurement of contract - required items. Delays attributable to untimely and rejected submittals will not serve as a basis for extending contract time for completion.
- 1-5. Submittals will be reviewed for compliance with contract requirements by the Consultant, and action thereon will be taken by COTR on behalf of the Contracting Officer.
- 1-6. Upon receipt of submittals, the Consultant will assign a file number thereto. Contractor, in any subsequent correspondence, shall refer to this file and identification number to expedite replies relative to previously approved or disapproved submittals.
- 1-7. The Government reserves the right to require additional submittals, whether or not particularly mentioned in this contract. If additional

submittals beyond those required by the contract are furnished pursuant to request therefor by Contracting Officer, adjustment in contract price and time will be made in accordance with Articles titled CHANGES (FAR 52.243-4) and CHANGES - SUPPLEMENT (VAAR 852.236-88) of the GENERAL CONDITIONS.

- 1-8. Schedules called for in specifications and shown on shop drawings shall be submitted for use and information of Department of Veterans Affairs and the Consultant. However, the Contractor shall assume responsibility for coordinating and verifying schedules. The Contracting Officer and the Consultant assumes no responsibility for checking schedules or layout drawings for exact sizes, exact numbers and detailed positioning of items.
- 1-9. Submittals must be submitted by Contractor only and shipped prepaid. Contracting Officer assumes no responsibility for checking quantities or exact numbers included in such submittals.
 - A. Submit samples in single units unless otherwise specified. Submit shop drawings, schedules, manufacturers' literature and data, and certificates in quadruplicate, except where a greater number is specified.
 - B. Submittals will receive consideration only when covered by a transmittal letter signed by Contractor. Letter shall be sent via first class mail and shall contain the list of items, name of Medical Center, name of Contractor, contract number, applicable specification paragraph numbers, applicable drawing numbers (and other information required for exact identification of location for each item), manufacturer and brand, ASTM or Federal Specification Number (if any) and such additional information as may be required by specifications for particular item being furnished. In addition, catalogs shall be marked to indicate specific items submitted for approval.
 1. A copy of letter must be enclosed with items, and any items received without identification letter will be considered "unclaimed goods" and held for a limited time only.
 2. Each sample, certificate, manufacturers' literature and data shall be labeled to indicate the name and location of the Medical Center, name of Contractor, manufacturer, brand, contract number and ASTM or Federal Specification Number as applicable and location(s) on project.

3. Required certificates shall be signed by an authorized representative of manufacturer or supplier of material, and by Contractor.
- C. If submittal samples have been disapproved, resubmit new samples as soon as possible after notification of disapproval. Such new samples shall be marked "Resubmitted Sample" in addition to containing other previously specified information required on label and in transmittal letter.
- D. Approved samples will be kept on file by the COTR at the site until completion of contract, at which time such samples will be delivered to Contractor as Contractor's property. Where noted in technical sections of specifications, approved samples in good condition may be used in their proper locations in contract work. At completion of contract, samples that are not approved will be returned to Contractor only upon request and at Contractor's expense. Such request should be made prior to completion of the contract. Disapproved samples that are not requested for return by Contractor will be discarded after completion of contract.
- E. Submittal drawings (shop, erection or setting drawings) and schedules, required for work of various trades, shall be checked before submission by technically qualified employees of Contractor for accuracy, completeness and compliance with contract requirements. These drawings and schedules shall be stamped and signed by Contractor certifying to such check.
 1. For each drawing required, submit one legible photographic paper or vellum reproducible.
 2. Reproducible shall be full size.
 3. Each drawing shall have marked thereon, proper descriptive title, including Medical Center location, project number, manufacturer's number, reference to contract drawing number, detail Section Number, and Specification Section Number.
 4. A space 4-3/4 by 5 inches shall be reserved on each drawing to accommodate approval or disapproval stamp.
 5. Submit drawings, ROLLED WITHIN A MAILING TUBE, fully protected for shipment.
 6. One reproducible print of approved or disapproved shop drawings will be forwarded to Contractor.

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7. When work is directly related and involves more than one trade, shop drawings shall be submitted to the Consultant under one cover.
- 1-11. At the time of transmittal to the Consultant, the Contractor shall also send a copy of the complete submittal directly to the COTR.
- 1-12. Samples for approval shall be sent to the Consultant, in care of Roof Evaluation and Design Consultants, Inc. T/A REDCO , 8 Blackwater Lane, Hampton, Virginia 23669.

- - - E N D - - -

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the availability and source of references and standards specified in the project manual under paragraphs APPLICABLE PUBLICATIONS and/or shown on the drawings.

1.2 AVAILABILITY OF SPECIFICATIONS LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS FPMR PART 101-29 (FAR 52.211-1) (AUG 1998)

- A. The GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29 and copies of specifications, standards, and commercial item descriptions cited in the solicitation may be obtained for a fee by submitting a request to - GSA Federal Supply Service, Specifications Section, Suite 8100, 470 East L'Enfant Plaza, SW, Washington, DC 20407, Telephone (202) 619-8925, Facsimile (202) 619-8978.
- B. If the General Services Administration, Department of Agriculture, or Department of Veterans Affairs issued this solicitation, a single copy of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained free of charge by submitting a request to the addressee in paragraph (a) of this provision. Additional copies will be issued for a fee.

1.3 AVAILABILITY FOR EXAMINATION OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-4) (JUN 1988)

The specifications and standards cited in this solicitation can be examined at the following location:

DEPARTMENT OF VETERANS AFFAIRS

Office of Construction & Facilities Management

Facilities Quality Service (00CFM1A)

811 Vermont Avenue, NW - Room 462

Washington, DC 20420

Telephone Numbers: (202) 461-8217 or (202) 461-8292

Between 9:00 AM - 3:00 PM

1.4 AVAILABILITY OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-3) (JUN 1988)

The specifications cited in this solicitation may be obtained from the associations or organizations listed below.

AA	Aluminum Association Inc. http://www.aluminum.org
AABC	Associated Air Balance Council http://www.aabchg.com
AAMA	American Architectural Manufacturer's Association http://www.aamanet.org
AAN	American Nursery and Landscape Association http://www.anla.org
AASHTO	American Association of State Highway and Transportation Officials http://www.aashto.org
AATCC	American Association of Textile Chemists and Colorists http://www.aatcc.org
ACGIH	American Conference of Governmental Industrial Hygienists http://www.acgih.org
ACI	American Concrete Institute http://www.aci-int.net
ACPA	American Concrete Pipe Association http://www.concrete-pipe.org
ACPPA	American Concrete Pressure Pipe Association http://www.acppa.org
ADC	Air Diffusion Council http://flexibleduct.org
AGA	American Gas Association http://www.aga.org
AGC	Associated General Contractors of America http://www.agc.org
AGMA	American Gear Manufacturers Association, Inc. http://www.agma.org
AHAM	Association of Home Appliance Manufacturers http://www.aham.org

AISC	American Institute of Steel Construction http://www.aisc.org
AISI	American Iron and Steel Institute http://www.steel.org
AITC	American Institute of Timber Construction http://www.aitc-glulam.org
AMCA	Air Movement and Control Association, Inc. http://www.amca.org
ANLA	American Nursery & Landscape Association http://www.anla.org
ANSI	American National Standards Institute, Inc. http://www.ansi.org
APA	The Engineered Wood Association http://www.apawood.org
ARI	Air-Conditioning and Refrigeration Institute http://www.ari.org
ASAE	American Society of Agricultural Engineers http://www.asae.org
ASCE	American Society of Civil Engineers http://www.asce.org
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers http://www.ashrae.org
ASME	American Society of Mechanical Engineers http://www.asme.org
ASSE	American Society of Sanitary Engineering http://www.asse-plumbing.org
ASTM	American Society for Testing and Materials http://www.astm.org
AWI	Architectural Woodwork Institute http://www.awinet.org
AWS	American Welding Society http://www.aws.org
AWWA	American Water Works Association http://www.awwa.org
BHMA	Builders Hardware Manufacturers Association http://www.buildershardware.com

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BIA	Brick Institute of America http://www.bia.org
CAGI	Compressed Air and Gas Institute http://www.cagi.org
CGA	Compressed Gas Association, Inc. http://www.cganet.com
CI	The Chlorine Institute, Inc. http://www.chlorineinstitute.org
CISCA	Ceilings and Interior Systems Construction Association http://www.cisca.org
CISPI	Cast Iron Soil Pipe Institute http://www.cispi.org
CLFMI	Chain Link Fence Manufacturers Institute http://www.chainlinkinfo.org
CPMB	Concrete Plant Manufacturers Bureau http://www.cpmc.org
CRA	California Redwood Association http://www.calredwood.org
CRSI	Concrete Reinforcing Steel Institute http://www.crsi.org
CTI	Cooling Technology Institute http://www.cti.org
DHI	Door and Hardware Institute http://www.dhi.org
EGSA	Electrical Generating Systems Association http://www.egsa.org
EEI	Edison Electric Institute http://www.eei.org
EPA	Environmental Protection Agency http://www.epa.gov
ETL	ETL Testing Laboratories, Inc. http://www.etl.com
FAA	Federal Aviation Administration http://www.faa.gov
FCC	Federal Communications Commission http://www.fcc.gov

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FPS	The Forest Products Society http://www.forestprod.org
GANA	Glass Association of North America http://www.cssinfo.com/info/gana.html/
FM	Factory Mutual Insurance http://www.fmglobal.com
GA	Gypsum Association http://www.gypsum.org
GSA	General Services Administration http://www.gsa.gov
HI	Hydraulic Institute http://www.pumps.org
HPVA	Hardwood Plywood & Veneer Association http://www.hpva.org
ICBO	International Conference of Building Officials http://www.icbo.org
ICEA	Insulated Cable Engineers Association Inc. http://www.icea.net
\ICAC	Institute of Clean Air Companies http://www.icac.com
IEEE	Institute of Electrical and Electronics Engineers http://www.ieee.org/
IMSA	International Municipal Signal Association http://www.imsasafety.org
IPCEA	Insulated Power Cable Engineers Association
NBMA	Metal Buildings Manufacturers Association http://www.mbma.com
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry Inc. http://www.mss-hq.com
NAAMM	National Association of Architectural Metal Manufacturers http://www.naamm.org
NAPHCC	Plumbing-Heating-Cooling Contractors Association http://www.phccweb.org
NBS	National Bureau of Standards See - NIST

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NBBPVI National Board of Boiler and Pressure Vessel Inspectors
<http://www.nationboard.org>

NEC National Electric Code
 See - NFPA National Fire Protection Association

NEMA National Electrical Manufacturers Association
<http://www.nema.org>

NFPA National Fire Protection Association
<http://www.nfpa.org>

NHLA National Hardwood Lumber Association
<http://www.natlhardwood.org>

NIH National Institute of Health
<http://www.nih.gov>

NIST National Institute of Standards and Technology
<http://www.nist.gov>

NLMA Northeastern Lumber Manufacturers Association, Inc.
<http://www.nelma.org>

NPA National Particleboard Association
 18928 Premiere Court
 Gaithersburg, MD 20879
 (301) 670-0604

NSF National Sanitation Foundation
<http://www.nsf.org>

NWWDA Window and Door Manufacturers Association
<http://www.nwwda.org>

OSHA Occupational Safety and Health Administration
 Department of Labor
<http://www.osha.gov>

PCA Portland Cement Association
<http://www.portcement.org>

PCI Precast Prestressed Concrete Institute
<http://www.pci.org>

PPI The Plastic Pipe Institute
<http://www.plasticpipe.org>

PEI Porcelain Enamel Institute, Inc.
<http://www.porcelainenamel.com>

PTI Post-Tensioning Institute
<http://www.post-tensioning.org>

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RFCI	The Resilient Floor Covering Institute http://www.rfci.com
RIS	Redwood Inspection Service See - CRA
RMA	Rubber Manufacturers Association, Inc. http://www.rma.org
SCMA	Southern Cypress Manufacturers Association http://www.cypressinfo.org
SDI	Steel Door Institute http://www.steeldoor.org
IGMA	Insulating Glass Manufacturers Alliance http://www.igmaonline.org
SJI	Steel Joist Institute http://www.steeljoist.org
SMACNA	Sheet Metal and Air-Conditioning Contractors National Association, Inc. http://www.smacna.org
SSPC	The Society for Protective Coatings http://www.sspc.org
STI	Steel Tank Institute http://www.steeltank.com
SWI	Steel Window Institute http://www.steelwindows.com
TCA	Tile Council of America, Inc. http://www.tileusa.com
TEMA	Tubular Exchange Manufacturers Association http://www.tema.org
TPI	Truss Plate Institute, Inc. 583 D'Onofrio Drive; Suite 200 Madison, WI 53719 (608) 833-5900
UBC	The Uniform Building Code See ICBO
UL	Underwriters' Laboratories Incorporated http://www.ul.com
ULC	Underwriters' Laboratories of Canada http://www.ulc.ca

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BUILDING 148
VA MEDICAL CENTER
HAMPTON, VA

PROJECT 590-13-148

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SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION:

This section specifies materials testing activities and inspection services required during project construction to be provided by a Testing Laboratory retained and paid for by Contractor.

1.2 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. American Association of State Highway and Transportation Officials (AASHTO):
 - T27-06.....Sieve Analysis of Fine and Coarse Aggregates
 - T96-02 (R2006).....Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - T99-01 (R2004).....The Moisture-Density Relations of Soils Using a 2.5 Kg (5.5 lb.) Rammer and a 305 mm (12 in.) Drop
 - T104-99 (R2003).....Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
 - T180-01 (R2004).....Moisture-Density Relations of Soils using a 4.54 kg (10 lb.) Rammer and a 457 mm (18 in.) Drop
 - T191-02(R2006).....Density of Soil In-Place by the Sand-Cone Method
- C. American Concrete Institute (ACI):
 - 506.4R-94 (R2004).....Guide for the Evaluation of Shotcrete
- D. American Society for Testing and Materials (ASTM):
 - A325-06.....Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 - A370-07.....Definitions for Mechanical Testing of Steel Products

C31/C31M-06.....Making and Curing Concrete Test Specimens in
the Field

C33-03.....Concrete Aggregates

C39/C39M-05.....Compressive Strength of Cylindrical Concrete
Specimens

C109/C109M-05.....Compressive Strength of Hydraulic Cement
Mortars

C138-07.....Unit Weight, Yield, and Air Content
(Gravimetric) of Concrete

C140-07.....Sampling and Testing Concrete Masonry Units and
Related Units

C143/C143M-05.....Slump of Hydraulic Cement Concrete

C172-07.....Sampling Freshly Mixed Concrete

C173-07.....Air Content of freshly Mixed Concrete by the
Volumetric Method

C330-05.....Lightweight Aggregates for Structural Concrete

C780-07.....Pre-construction and Construction Evaluation of
Mortars for Plain and Reinforced Unit Masonry

C1019-08.....Sampling and Testing Grout

C1064/C1064M-05.....Freshly Mixed Portland Cement Concrete

C1077-06.....Laboratories Testing Concrete and Concrete
Aggregates for Use in Construction and Criteria
for Laboratory Evaluation

C1314-07.....Compressive Strength of Masonry Prisms

D698-07.....Laboratory Compaction Characteristics of Soil
Using Standard Effort

D1143-07.....Piles Under Static Axial Compressive Load

D1188-07.....Bulk Specific Gravity and Density of Compacted
Bituminous Mixtures Using Paraffin-Coated
Specimens

D1556-07.....Density and Unit Weight of Soil in Place by the
Sand-Cone Method

D1557-07.....Laboratory Compaction Characteristics of Soil
Using Modified Effort

D2166-06.....Unconfined Compressive Strength of Cohesive
Soil

D2167-94(R2001).....Density and Unit Weight of Soil in Place by the
Rubber Balloon Method
D2216-05.....Laboratory Determination of Water (Moisture)
Content of Soil and Rock by Mass
D2922-05.....Density of soil and Soil-Aggregate in Place by
Nuclear Methods (Shallow Depth)
D2974-07.....Moisture, Ash, and Organic Matter of Peat and
Other Organic Soils
D3666-(2002).....Minimum Requirements for Agencies Testing and
Inspection Bituminous Paving Materials
D3740-07.....Minimum Requirements for Agencies Engaged in
the Testing and Inspecting Road and Paving
Material
E94-04.....Radiographic Testing
E164-03.....Ultrasonic Contact Examination of Weldments
E329-07.....Agencies Engaged in Construction Inspection
and/or Testing
E543-06.....Agencies Performing Non-Destructive Testing
E605-93(R2006).....Thickness and Density of Sprayed Fire-Resistive
Material (SFRM) Applied to Structural Members
E709-(2001).....Guide for Magnetic Particle Examination
E1155-96(R2008).....Determining FF Floor Flatness and FL Floor
Levelness Numbers

E. American Welding Society (AWS):

D1.1-07.....Structural Welding Code-Steel

1.3 REQUIREMENTS:

A. Accreditation Requirements: Testing Laboratory retained and paid for by Contractor, must be accredited by one or more of the National Voluntary Laboratory Accreditation Program (NVLAP) programs acceptable in the geographic region for the project. Furnish to the COTR a copy of the Certificate of Accreditation and Scope of Accreditation. For testing laboratories that have not yet obtained accreditation by a NVLAP program, submit an acknowledgement letter from one of the laboratory accreditation authorities indicating that the application for accreditation has been received and the accreditation process has started, and submit to the COTR for approval, certified statements, signed by an official of the testing laboratory attesting that the

proposed laboratory, meets or conforms to the ASTM standards listed below as appropriate to the testing field.

1. Laboratories engaged in testing of construction materials shall meet the requirements of ASTM E329.
 2. Laboratories engaged in testing of concrete and concrete aggregates shall meet the requirements of ASTM C1077.
 3. Laboratories engaged in testing of bituminous paving materials shall meet the requirements of ASTM D3666.
 4. Laboratories engaged in testing of soil and rock, as used in engineering design and construction, shall meet the requirements of ASTM D3740.
 5. Laboratories engaged in inspection and testing of steel, stainless steel, and related alloys will be evaluated according to ASTM A880.
 6. Laboratories engaged in non-destructive testing (NDT) shall meet the requirements of ASTM E543.
 7. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA.
- B. Inspection and Testing: Testing laboratory shall inspect materials and workmanship and perform tests described herein and additional tests requested by COTR. When it appears materials furnished, or work performed by Contractor fail to meet construction contract requirements, Testing Laboratory shall direct attention of COTR to such failure.
- C. Written Reports: Testing laboratory shall submit test reports to COTR, Contractor, and Local Building Authority within 24 hours after each test is completed unless other arrangements are agreed to in writing by the COTR. Submit reports of tests that fail to meet construction contract requirements on colored paper.
- D. Verbal Reports: Give verbal notification to COTR immediately of any irregularity.
- E. Test Standards: The Testing Laboratory shall include a lump sum allowance of \$5000 for furnishing published standards (ASTM, AASHTO, ACI, ANSI, AWS, ASHRAE, UL, etc.) referred to or specifically referenced which are pertinent to any Sections of these specifications. Furnish one set of standards in single copies or bound volumes to the COTR within 60 days. Photocopies are not acceptable. Billings for the standards furnished shall be at the net cost to Testing Laboratory. A

preliminary list of test standards, with the estimated costs, shall be submitted to the COTR for review before any publications of reference standards are ordered.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 MASONRY:

A. Mortar Tests:

1. Laboratory compressive strength test:
 - a. Comply with ASTM C780.
 - b. Obtain samples during or immediately after discharge from batch mixer.
 - c. Furnish molds with 2 inch, 3 compartment gang cube.
 - d. Test one sample at 7 days and 2 samples at 28 days.
2. Two tests during first week of operation; one test per week after initial test until masonry completion.

B. Grout Tests:

1. Laboratory compressive strength test:
 - a. Comply with ASTM C1019.
 - b. Test one sample at 7 days and 2 samples at 28 days.
 - c. Perform test for each 2500 square feet of masonry.

C. Masonry Unit Tests:

1. Laboratory Compressive Strength Test:
 - a. Comply with ASTM C140.
 - b. Test 3 samples for each 5000 square feet of wall area.

D. Prism Tests: For each type of wall construction indicated, test masonry prisms per ASTM C1314 for each 5000 square feet of wall area. Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.

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SECTION 01 51 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 TEMPORARY UTILITIES

- A. Water and electrical power shall be furnished by the Owner for construction use; however the Contractor will bear the cost of any expenses in the installation and / or removal of any temporary services that are required. The Contractor shall be responsible for providing all hoses, electrical cords or others items necessary to get power to the point of use. Contractor shall be responsible for providing for and the associated expenses for all necessary permits, meters, water used, hook-up and disconnects for water used in the mixing, application and cleanup of all Lightweight Insulating Concrete applications.

1.03 CONSTRUCTION FACILITIES

- A. Outside toilet facilities shall be provided by the Contractor. In no case shall toilets in the building be used by the Contractor. The toilet shall be set and properly secured in a space designated by the Owner.

1.04 CONSTRUCTION AIDS

- A. Temporary scaffolding, ladders, mechanical lifts, swing staging and cranes shall be provided by the Contractor for access to perform the required work. Protection of the roof, building and pavement areas shall be provided by the Contractor. Damage caused to the Owners property shall be repaired at the Contractor's cost. The Contractor shall provide trash chutes as necessary to safely remove debris from elevated portions of the building. The Contractor shall videotape the grounds surrounding the building prior to project start and provide a copy to the Department of Veterans Affairs.

1.05 VEHICULAR ACCESS AND PARKING

- A. The Owner will designate parking spaces for the Contractor's employees.

1.06 TEMPORARY BARRIERS AND ENCLOSURES

- A. The Contractor shall provide temporary 8 foot tall chain link fencing around the designated staging areas.
- B. The Contractor shall provide temporary barriers around the work area, staging areas and equipment. During overhead construction barriers shall be adequate to protect pedestrians and vehicles from falling

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debris. The Contractor shall provide signage indicating the sidewalk is closed and to redirect pedestrians to alternate routes. The signage shall be installed at both ends of the staging area.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

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SECTION 01 57 19
TEMPORARY ENVIRONMENTAL CONTROLS

EP-1. DESCRIPTION

- A. This section specifies the control of environmental pollution and damage that the Contractor must consider for air, water, and land resources. It includes management of visual aesthetics, noise, solid waste, radiant energy, and radioactive materials, as well as other pollutants and resources encountered or generated by the Contractor. The Contractor is obligated to consider specified control measures with the costs included within the various contract items of work.
- B. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which:
 - 1. Adversely effect human health or welfare,
 - 2. Unfavorably alter ecological balances of importance to human life,
 - 3. Effect other species of importance to humankind, or;
 - 4. Degrade the utility of the environment for aesthetic, cultural, and historical purposes.
- C. Definitions of Pollutants:
 - 1. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.
 - 2. Debris: Combustible and noncombustible wastes, such as leaves, tree trimmings, ashes, and waste materials resulting from construction or maintenance and repair work.
 - 3. Sediment: Soil and other debris that has been eroded and transported by runoff water.
 - 4. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
 - 5. Surface Discharge: The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "water of the United States" and would require a permit to discharge water from the governing agency.

6. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass and crockery, metal and lumber scrap, tin cans, and bones.
7. Sanitary Wastes:
 - a. Sewage: Domestic sanitary sewage and human and animal waste.
 - b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

EP-2. QUALITY CONTROL

- A. Establish and maintain quality control for the environmental protection of all items set forth herein.
- B. Record on daily reports any problems in complying with laws, regulations, and ordinances. Note any corrective action taken.

EP-3. REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
- B. U.S. National Archives and Records Administration (NARA):
33 CFR 328.....Definitions

EP-4. SUBMITTALS

- A. In accordance with Section, 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish the following:
 1. Environmental Protection Plan: After the contract is awarded and prior to the commencement of the work, the Contractor shall meet with the COTR to discuss the proposed Environmental Protection Plan and to develop mutual understanding relative to details of environmental protection. Not more than 20 days after the meeting, the Contractor shall prepare and submit to the COTR for approval, a written and/or graphic Environmental Protection Plan including, but not limited to, the following:
 - a. Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.
 - b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site.
 - c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
 - d. Description of the Contractor's environmental protection personnel training program.

- e. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control, noise control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.
 - f. Methods for protection of features to be preserved within authorized work areas including trees, shrubs, vines, grasses, ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, and archeological and cultural resources.
 - g. Procedures to provide the environmental protection that comply with the applicable laws and regulations. Describe the procedures to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures as described in the Environmental Protection Plan.
 - h. Permits, licenses, and the location of the solid waste disposal area.
 - i. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials. Include as part of an Erosion Control Plan approved by the Department of Veterans Affairs.
 - j. Environmental Monitoring Plans for the job site including land, water, air, and noise.
 - k. Work Area Plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas. This plan may be incorporated within the Erosion Control Plan.
 - l. VPDES GENERAL PERMIT REGISTRATION STATEMENT shall be completed by the Contractor and submitted to the Virginia Department of Conservation and Recreation (DCR) in accordance with DCR instructions and regulations. Contractor shall coordinate with the COTR as needed to complete this requirement. Contractor shall submit evidence of DCR approval prior to starting work.
- B. Approval of the Contractor's Environmental Protection Plan will not relieve the Contractor of responsibility for adequate and continued control of pollutants and other environmental protection measures.

EP-5. PROTECTION OF ENVIRONMENTAL RESOURCES

- A. Protect environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this contract. Confine activities to areas defined by the specifications and drawings.
- B. Protection of Land Resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from the COTR. Do not fasten or attach ropes, cables, or guys to trees for anchorage unless specifically authorized, or where special emergency use is permitted.
 - 1. Work Area Limits: Prior to any construction, mark the areas that require work to be performed under this contract. Mark or fence isolated areas within the general work area that are to be saved and protected. Protect monuments, works of art, and markers before construction operations begin. Convey to all personnel the purpose of marking and protecting all necessary objects.
 - 2. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using any other approved techniques.
 - a. Box and protect from damage existing trees and shrubs to remain on the construction site.
 - b. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.
 - c. Do not store building materials or perform construction activities closer to existing trees or shrubs than the farthest extension of their limbs.
 - 3. Reduction of Exposure of Unprotected Erodible Soils: Plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use. Form earthwork to final grade as shown. Immediately protect side slopes and back slopes upon completion of rough grading.
 - 4. Temporary Protection of Disturbed Areas: Construct diversion ditches, benches, and berms to retard and divert runoff from the

- construction site to protected drainage areas approved under paragraph 208 of the Clean Water Act.
- a. Sediment Basins: Trap sediment from construction areas in temporary or permanent sediment basins that accommodate the runoff of a local 10 (design year) storm. After each storm, pump the basins dry and remove the accumulated sediment. Control overflow/drainage with paved weirs or by vertical overflow pipes, draining from the surface.
 - b. Reuse or conserve the collected topsoil sediment as directed by the COTR. Topsoil use and requirements are specified in Section 31 20 00, EARTH MOVING.
 - c. Institute effluent quality monitoring programs as required by Federal, State, and local environmental agencies.
5. Erosion and Sedimentation Control Devices: The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's activities. Construct or install all temporary and permanent erosion and sedimentation control features shown. Maintain temporary erosion and sediment control measures such as berms, dikes, drains, sedimentation basins, grassing, and mulching, until permanent drainage and erosion control facilities are completed and operative.
6. Manage borrow areas on and off Government property to minimize erosion and to prevent sediment from entering nearby water courses or lakes.
7. Manage and control spoil areas on and off Government property to limit spoil to areas on the Environmental Protection Plan and prevent erosion of soil or sediment from entering nearby water courses or lakes.
8. Protect adjacent areas from despoilment by temporary excavations and embankments.
9. Handle and dispose of solid wastes in such a manner that will prevent contamination of the environment. Place solid wastes (excluding clearing debris) in containers that are emptied on a regular schedule. Transport all solid waste off Government property and dispose of waste in compliance with Federal, State, and local requirements.

10. Store chemical waste away from the work areas in corrosion resistant containers and dispose of waste in accordance with Federal, State, and local regulations.
 11. Handle discarded materials other than those included in the solid waste category as directed by the COTR.
- C. Protection of Water Resources: Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and sewer systems. Implement management techniques to control water pollution by the listed construction activities that are included in this contract.
1. Washing and Curing Water: Do not allow wastewater directly derived from construction activities to enter water areas. Collect and place wastewater in retention ponds allowing the suspended material to settle, the pollutants to separate, or the water to evaporate.
 2. Control movement of materials and equipment at stream crossings during construction to prevent violation of water pollution control standards of the Federal, State, or local government.
 3. Monitor water areas affected by construction.
- D. Protection of Fish and Wildlife Resources: Keep construction activities under surveillance, management, and control to minimize interference with, disturbance of, or damage to fish and wildlife. Prior to beginning construction operations, list species that require specific attention along with measures for their protection.
- E. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with the State of Virginia's Air Pollution Control Act, and Federal emission and performance laws and standards. Maintain ambient air quality standards set by the Environmental Protection Agency, for those construction operations and activities specified.
1. Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities, processing, and preparation of materials (such as from asphaltic batch plants) at all times, including weekends, holidays, and hours when work is not in progress.

2. Particulates Control: Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinklering, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.
 3. Hydrocarbons and Carbon Monoxide: Control monoxide emissions from equipment to Federal and State allowable limits.
 4. Odors: Control odors of construction activities and prevent obnoxious odors from occurring.
- F. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the COTR. Maintain noise-produced work at or below the decibel levels and within the time periods specified.
1. Perform construction activities involving repetitive, high-level impact noise only between 8:00 a.m. and 6:00 p.m unless otherwise permitted by local ordinance or the COTR. Repetitive impact noise on the property shall not exceed the following dB limitations:

Time Duration of Impact Noise	Sound Level in dB
More than 12 minutes in any hour	70
Less than 30 seconds of any hour	85
Less than three minutes of any hour	80
Less than 12 minutes of any hour	75

2. Provide sound-deadening devices on equipment and take noise abatement measures that are necessary to comply with the requirements of this contract, consisting of, but not limited to, the following:
 - a. Maintain maximum permissible construction equipment noise levels at 50 feet (dBA):

EARTHMOVING		MATERIALS HANDLING	
FRONT LOADERS	75	CONCRETE MIXERS	75
BACKHOES	75	CONCRETE PUMPS	75

DOZERS	75	CRANES	75
TRACTORS	75	DERRICKS IMPACT	75
SCAPERS	80	PILE DRIVERS	95
GRADERS	75	JACK HAMMERS	75
TRUCKS	75	ROCK DRILLS	80
PAVERS, STATIONARY	80	PNEUMATIC TOOLS	80
PUMPS	75		
GENERATORS	75	SAWS	75
COMPRESSORS	75	VIBRATORS	75

- b. Use shields or other physical barriers to restrict noise transmission.
 - c. Provide soundproof housings or enclosures for noise-producing machinery.
 - d. Use efficient silencers on equipment air intakes.
 - e. Use efficient intake and exhaust mufflers on internal combustion engines that are maintained so equipment performs below noise levels specified.
 - f. Line hoppers and storage bins with sound deadening material.
 - g. Conduct truck loading, unloading, and hauling operations so that noise is kept to a minimum.
3. Measure sound level for noise exposure due to the construction at least once every five successive working days while work is being performed above 55 dB(A) noise level. Measure noise exposure at the property line or 50 feet from the noise source, whichever is greater. Measure the sound levels on the A weighing network of a General Purpose sound level meter at slow response. To minimize the effect of reflective sound waves at buildings, take measurements at three to six feet in front of any building face. Submit the recorded information to the COTR noting any problems and the alternatives for mitigating actions.
- G. Restoration of Damaged Property: If any direct or indirect damage is done to public or private property resulting from any act, omission, neglect, or misconduct, the Contractor shall restore the damaged property to a condition equal to that existing before the damage at no

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additional cost to the Government. Repair, rebuild, or restore property as directed or make good such damage in an acceptable manner.

- H. Final Clean-up: On completion of project and after removal of all debris, rubbish, and temporary construction, Contractor shall leave the construction area in a clean condition satisfactory to the COTR. Cleaning shall include off the station disposal of all items and materials not required to be salvaged, as well as all debris and rubbish resulting from demolition and new work operations.

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SECTION 01 58 16
TEMPORARY INTERIOR SIGNAGE

PART 1 GENERAL

DESCRIPTION

This section specifies temporary interior signs.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNS

- A. Fabricate from 110 pound mat finish white paper.
- B. Cut to 4-inch wide by 12 inch long size tag.
- C. Punch 1/8-inch diameter hole centered on 4-inch dimension of tag. Edge of Hole spaced approximately 1/2-inch from one end on tag.
- D. Reinforce hole on both sides with gummed cloth washer or other suitable material capable of preventing tie pulling through paper edge.
- E. Ties: Steel wire 0.0120-inch thick, attach to tag with twist tie, leaving 6-inch long free ends.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install temporary signs attached to room door frame or room door knob, lever, or pull for doors on corridor openings.
- B. Mark on signs with felt tip marker having approximately 1/8-inch wide stroke for clearly legible numbers or letters.
- C. Identify room with numbers as designated on floor plans.

3.2 LOCATION

- A. Install on doors that have room, corridor, and space numbers shown.
- B. Doors that do not require signs are as follows:
 - 1. Corridor barrier doors (cross-corridor) in corridor with same number.
 - 2. Folding doors or partitions.
 - 3. Toilet or bathroom doors within and between rooms.
 - 4. Communicating doors in partitions between rooms with corridor entrance doors.
 - 5. Closet doors within rooms.
- C. Replace missing, damaged, or illegible signs.

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SECTION 01732 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Salvage of existing items to be reused or recycled.
- B. Related Sections include the following:
 - 1. Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.5 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.

1.6 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
 - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. Notify Consultant of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Owner assumes no responsibility for condition of areas to be selectively demolished. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- E. Storage or sale of removed items or materials on-site will not be permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.

- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to the Consultant.
- D. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 3. Protect existing site improvements, appurtenances, and landscaping to remain.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
3. Cover and protect furniture, furnishings, and equipment that have not been removed.
4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 1 Section "Temporary Facilities and Controls."

3.4 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
 1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 4. Maintain adequate ventilation when using cutting torches.

5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
6. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
7. Dispose of demolished items and materials promptly.
8. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

B. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Consultant, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site. Site shall be left clean of all demolished materials at the end of each work day.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

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SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the requirements for the management of non-hazardous building construction and demolition waste.
- B. Waste disposal in landfills shall be minimized to the greatest extent possible. Of the inevitable waste that is generated, as much of the waste material as economically feasible shall be salvaged, recycled or reused.
- C. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, and facilitate their salvage and recycle not limited to the following:
 - 1. Waste Management Plan development and implementation.
 - 2. Techniques to minimize waste generation.
 - 3. Sorting and separating of waste materials.
 - 4. Salvage of existing materials and items for reuse or resale.
 - 5. Recycling of materials that cannot be reused or sold.
- D. At a minimum the following waste categories shall be diverted from landfills:
 - 1. Soil.
 - 2. Inerts (eg, concrete, masonry and asphalt).
 - 3. Clean dimensional wood and palette wood.
 - 4. Green waste (biodegradable landscaping materials).
 - 5. Engineered wood products (plywood, particle board and I-joists, etc).
 - 6. Metal products (eg, steel, wire, beverage containers, etc).
 - 7. Cardboard, paper and packaging.
 - 8. Bitumen roofing materials.
 - 9. Plastics (eg, ABS, PVC).
 - 10. Carpet and/or pad.
 - 11. Gypsum board.
 - 12. Insulation.
 - 13. Paint.

1.2 RELATED WORK

- A. Section 02 41 00, DEMOLITION.
- B. Section 01 00 00, GENERAL REQUIREMENTS.

1.3 QUALITY ASSURANCE

- A. Contractor shall practice efficient waste management when sizing, cutting and installing building products. Processes shall be employed to ensure the generation of as little waste as possible. Construction /Demolition waste includes products of the following:
1. Excess or unusable construction materials.
 2. Packaging used for construction products.
 3. Poor planning and/or layout.
 4. Construction error.
 5. Over ordering.
 6. Weather damage.
 7. Contamination.
 8. Mishandling.
 9. Breakage.
- B. Establish and maintain the management of non-hazardous building construction and demolition waste set forth herein. Conduct a site assessment to estimate the types of materials that will be generated by demolition and construction.
- C. Contractor shall develop and implement procedures to reuse and recycle new materials to a minimum of 50 percent.
- D. Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling. Any revenues or savings obtained from salvage or recycling shall accrue to the contractor.
- E. Contractor shall provide all demolition, removal and legal disposal of materials. Contractor shall ensure that facilities used for recycling, reuse and disposal shall be permitted for the intended use to the extent required by local, state, federal regulations. The Whole Building Design Guide website <http://www.wbdg.org> provides a Construction Waste Management Database that contains information on companies that haul, collect, and process recyclable debris from construction projects.
- F. Contractor shall assign a specific area to facilitate separation of materials for reuse, salvage, recycling, and return. Such areas are to be kept neat and clean and clearly marked in order to avoid contamination or mixing of materials.

- G. Contractor shall provide on-site instructions and supervision of separation, handling, salvaging, recycling, reuse and return methods to be used by all parties during waste generating stages.
- H. Record on daily reports any problems in complying with laws, regulations and ordinances with corrective action taken.

1.4 TERMINOLOGY

- A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial and industrial waste resulting from construction, remodeling, repair and demolition operations.
- B. Clean: Untreated and unpainted; uncontaminated with adhesives, oils, solvents, mastics and like products.
- C. Construction and Demolition Waste: Includes all non-hazardous resources resulting from construction, remodeling, alterations, repair and demolition operations.
- D. Dismantle: The process of parting out a building in such a way as to preserve the usefulness of its materials and components.
- E. Disposal: Acceptance of solid wastes at a legally operating facility for the purpose of land filling (includes Class III landfills and inert fills).
- F. Inert Backfill Site: A location, other than inert fill or other disposal facility, to which inert materials are taken for the purpose of filling an excavation, shoring or other soil engineering operation.
- G. Inert Fill: A facility that can legally accept inert waste, such as asphalt and concrete exclusively for the purpose of disposal.
- H. Inert Solids/Inert Waste: Non-liquid solid resources including, but not limited to, soil and concrete that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board, and does not contain significant quantities of decomposable solid resources.
- I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- J. Mixed Debris Recycling Facility: A solid resource processing facility that accepts loads of mixed construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing non-recyclable materials.

- K. Permitted Waste Hauler: A company that holds a valid permit to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.
- L. Recycling: The process of sorting, cleansing, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
 - 1. On-site Recycling - Materials that are sorted and processed on site for use in an altered state in the work, i.e. concrete crushed for use as a sub-base in paving.
 - 2. Off-site Recycling - Materials hauled to a location and used in an altered form in the manufacture of new products.
- M. Recycling Facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of new products. Depending on the types of materials accepted and operating procedures, a recycling facility may or may not be required to have a solid waste facilities permit or be regulated by the local enforcement agency.
- N. Reuse: Materials that are recovered for use in the same form, on-site or off-site.
- O. Return: To give back reusable items or unused products to vendors for credit.
- P. Salvage: To remove waste materials from the site for resale or re-use by a third party.
- Q. Source-Separated Materials: Materials that are sorted by type at the site for the purpose of reuse and recycling.
- R. Solid Waste: Materials that have been designated as non-recyclable and are discarded for the purposes of disposal.
- S. Transfer Station: A facility that can legally accept solid waste for the purpose of temporarily storing the materials for re-loading onto other trucks and transporting them to a landfill for disposal, or recovering some materials for re-use or recycling.

1.5 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES, furnish the following:

- B. Prepare and submit to the COTR a written demolition debris management plan. The plan shall include, but not be limited to, the following information:
1. Procedures to be used for debris management.
 2. Techniques to be used to minimize waste generation.
 3. Analysis of the estimated job site waste to be generated:
 - a. List of each material and quantity to be salvaged, reused, recycled.
 - b. List of each material and quantity proposed to be taken to a landfill.
 4. Detailed description of the Means/Methods to be used for material handling.
 - a. On site: Material separation, storage, protection where applicable.
 - b. Off site: Transportation means and destination. Include list of materials.
 - 1) Description of materials to be site-separated and self-hauled to designated facilities.
 - 2) Description of mixed materials to be collected by designated waste haulers and removed from the site.
 - c. The names and locations of mixed debris reuse and recycling facilities or sites.
 - d. The names and locations of trash disposal landfill facilities or sites.
 - e. Documentation that the facilities or sites are approved to receive the materials.
- B. Designated Manager responsible for instructing personnel, supervising, documenting and administer over meetings relevant to the Waste Management Plan.
- C. Monthly summary of construction and demolition debris diversion and disposal, quantifying all materials generated at the work site and disposed of or diverted from disposal through recycling.

1.6 APPLICABLE PUBLICATIONS

Publications listed below form a part of this specification to the extent referenced. Publications are referenced by the basic designation only. In the event that criteria requirements conflict, the most stringent requirements shall be met.

A. U.S. Green Building Council (USGBC):

LEED Green Building Rating System for New Construction

1.7 RECORDS

Maintain records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Records shall be kept in accordance with the LEED Reference Guide and LEED Template.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. List of each material and quantity to be salvaged, recycled, reused.
- B. List of each material and quantity proposed to be taken to a landfill.
- C. Material tracking data: Receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices, net total costs or savings.

PART 3 - EXECUTION

3.1 COLLECTION

- A. Provide all necessary containers, bins and storage areas to facilitate effective waste management.
- B. Clearly identify containers, bins and storage areas so that recyclable materials are separated from trash and can be transported to respective recycling facility for processing.
- C. Hazardous wastes shall be separated, stored, disposed of according to local, state, federal regulations.

3.2 DISPOSAL

- A. Contractor shall be responsible for transporting and disposing of materials that cannot be delivered to a source-separated or mixed materials recycling facility to a transfer station or disposal facility that can accept the materials in accordance with state and federal regulations.
- B. Construction or demolition materials with no practical reuse or that cannot be salvaged or recycled shall be disposed of at a landfill or incinerator.

3.3 REPORT

- A. With each application for progress payment, submit a summary of construction and demolition debris diversion and disposal including beginning and ending dates of period covered.

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- B. Quantify all materials diverted from landfill disposal through salvage or recycling during the period with the receiving parties, dates removed, transportation costs, weight tickets, manifests, invoices. Include the net total costs or savings for each salvaged or recycled material.
- C. Quantify all materials disposed of during the period with the receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices. Include the net total costs for each disposal.

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SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project Record Documents.
 - 3. Operation and Maintenance Manuals.
 - 4. Warranties.
 - 5. Final cleaning.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
 - 2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
 - 3. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Prepare and submit Documents (As-Built Drawings), operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label these with manufacturer's name and model number where applicable.
 - 6. Make final changeover of permanent locks and deliver keys to Owner.

7. Complete startup testing of systems.
8. Terminate and remove temporary facilities from Project site, along with any mockups, construction tools, and similar elements.
9. Advise Owner of changeover in heat and other utilities.
10. Submit changeover information related to Owner's use, operation, and maintenance.
11. Complete final cleaning requirements, including touchup painting.
12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Consultant will either proceed with inspection or notify Contractor of unfulfilled requirements. Consultant will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Consultant, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according requirements.
2. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems installed in Work.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Consultant will either proceed with inspection or notify Contractor of unfulfilled requirements. Consultant will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Page number.

1.6 PROJECT RECORD DOCUMENTS

- A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Consultant's reference during normal working hours.
- B. Record Drawings - (As-Built Drawings): Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
 1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.
 - e. Include all sketches issued during bidding and construction.
 2. Mark record sets in red. Use other colors to distinguish between changes for different categories of the Work at the same location.
 3. Mark important additional information that was either shown schematically or omitted from original Drawings.
 4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
 5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

6. Have the final Project Record Drawings scanned into digital PDF format and copied onto compact disks (CDs). Provide a copy of the CDs to the Owner and the Consultant. Insure that the copy process produces legible PDF files, in that all markings are visible and reproducible.

1.7 System, subsystem, and equipment descriptions, including OPERATION AND MAINTENANCE MANUALS

- A. Assemble two complete sets of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:

1. Operation Data:

- a. Emergency instructions and procedures.
- b. System, subsystem, and equipment descriptions, including operating standards.
- c. Operating procedures, including startup, shutdown, seasonal, and weekend operations.
- d. Description of controls and sequence of operations.
- e. Piping diagrams.

2. Maintenance Data:

- a. Manufacturer's information, including list of spare parts.
- b. Name, address, and telephone number of Installer or supplier.
- c. Maintenance procedures.
- d. Maintenance and service schedules for preventive and routine maintenance.
- e. Maintenance record forms.
- f. Sources of spare parts and maintenance materials.
- g. Copies of maintenance service agreements.
- h. Copies of warranties and bonds.

- B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.8 WARRANTIES

- A. Submittal Time: Submit written warranties on request of the Consultant for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- D. Provide additional copies of each warranty to be included in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

- a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
- b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
- c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
- d. Remove tools, construction equipment, fencing, machinery, and surplus material from Project site.
- e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
- f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, manholes, attics, and similar spaces.
- g. Sweep concrete floors broom clean in unoccupied spaces.
- h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
- i. Clean new vinyl floors and apply manufacturer's approved polish/sealer with two (2) coats.
- j. Clean new tile finish surfaces.
- k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
- l. Remove labels that are not permanent.
- m. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
- 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
- n. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
- o. Replace parts subject to unusual operating conditions.
- p. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- q. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- r. Clean ducts, blowers, and coils if units were operated without filters during construction.
- s. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
- t. Leave Project clean and ready for occupancy.

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- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

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SECTION 06 10 50 - MISCELLANEOUS CARPENTRY

PART 1 GENERAL

RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

A. This Section includes the following:

Wood nailers and wood blocking

Related Sections include the following:

Division 7, Section 07310 "WV-80 Mil PVC Membrane Roofing"

Division 7, Section 07620 "Sheet Metal Flashing"

1.03 UNIT PRICES

A. Replacement of deteriorated wood blocking and nailers in excess of 500 linear feet for each of the following: 2" x 4", 2" x 6", 2" x 8" and 2" x 10", which is provided for in the base bid, will be considered an addition to the Contract. Wood blocking and nailers indicated as new in the Drawings are to be provided for in the base bid and will not be considered an addition to the Contract. The Consultant and Contractor verify all quantities prior to replacement. The following is a description of the Work to be included in the unit price:

1. Wood nailer and blocking replacement will include removal and disposal of existing, provide new wood nailers or blocking to match existing size, and new insulation height, secure in accordance with the specifications and details. The unit of measure shall be lineal feet.

1.04 DEFINITIONS

A. Miscellaneous carpentry includes carpentry work not specified as a part of other Sections and generally not exposed, unless otherwise specified.

1.05 WORK INCLUDED

A. Provide all labor, materials, equipment and supervision necessary to provide wood nailers as outlined in the Specifications and on the enclosed Drawings. The following is a brief summary of the Work:

Provide new wood nailers to raise the height of the existing vent curbs on where necessary. Provide new wood nailers to match the height of the new roof insulation at all curbs and perimeter locations.

Provide new wood nailers under new edge gravel stop metal per specifications and details.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Provide polyethylene tarps to keep all materials under cover and dry. Stack lumber with spacers between bundles to allow air circulation. Secure tarps at the end of each day or in the event of inclement weather.

1.07 SCHEDULING

- A. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Miscellaneous Fasteners: Provide fasteners as indicated on the Fastener Schedule in the Drawings. All fasteners shall be corrosion resistant.
- B. Wood Nailers/Blocking: Shop pressure-treated southern yellow pine using waterborne preservatives in accordance with American Wood Preservers Association (AWPA) Standard C2 with a minimum preservative retention of 0.25 lbs./cu. ft. Minimum of Grade No. 2 wood of the nominal dimensions indicated on the attached Drawings.
- C. Plywood: APA rated sheathing, ½" and ¾ inch thick, Exposure 1, one side C Grade, one side D Grade (CDX). Sizes are indicated on the drawings.
- D. Tapered Wood Shims: Exterior exposure rated wood, sized to provide ½" per foot slope towards roof.
- E. Sealant: A single component polyurethane sealant which meets the minimum requirements of Federal Specification TT-S-001543A, Class A and ASTM C 920, Type S, Grade NS, Class 25. No required color.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify measurements and dimensions shown before proceeding with carpentry work.
- B. Examine supporting structure and conditions to which carpentry will be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 WOOD NAILER INSTALLATION

- A. Provide wood nailers and blocking where shown on the attached Drawings.
- B. Secure all wood blocking in accordance with the specifications and details. Countersink fasteners flush with surfaces.
- C. Provide washers under bolt heads and nuts in contact with wood.
- D. Interlace ends of boards at corners and stagger end laps between board layers. Cut boards to make tight connections between members. Replace any boards which split during fastening.
- E. Do not wax or lubricate fasteners that depend on friction for holding power.

3.03 CURB INSTALLATION

- A. Provide new wood roof curb extensions as required to maintain required 8" minimum height of finished roof, as indicated in the Drawings. Size the new curbs fit existing penetrations and curb mounted equipment. Construct new curbs from lumber with the nominal dimensions indicated on the drawings.
- B. Verify that the existing penetrations, nailers and roof-mounted equipment are properly secured. Provide fasteners to secure any equipment or nailers found to be loose. If deteriorated nailers are encountered, they should be replaced prior to installing the roof system. The Consultant will verify the quantity prior to replacement.

3.04 JOB SITE CLEANUP

- A. All debris shall be removed from the job site by the Contractor in accordance with Contract provisions.

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SECTION 07 22 00 - ROOF DECK AND INSULATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, equipment, and materials to install new roof insulation over the properly prepared deck substrates. The insulations required shall be as below:
- B. Along roof drain and scupper lines, install 1/2" per 12" tapered polyisocyanurate insulation crickets over properly installed base layer of 1" polyisocyanurate insulation, minimum thickness of tapered insulation shall be 1".
- C. Install 1/2" per 12" polyisocyanurate crickets upslope of all roof curbs and at walls and between all roof drains and scuppers per specifications and details.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General Supplementary Conditions and Division 1 Specification Sections apply to this section.
- B. Related work specified elsewhere:
 - 1. Division 7 Section "Wind Vented 80 MIL PVC Membrane Roofing."
 - 2. Division 7 Section "Flashing and Sheet Metal."

1.3 REFERENCES

ASTM A-167-94a	Specification for Stainless and Heat-Resisting Chromium Nickel Steel Plate, Sheet and Strip
ASTM A-653	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process
ASTM B-29	Pig Lead
ASTM B-32	Solder Metal
ASTM C-165-95	Test Method for Measuring Compressive Properties of Thermal Insulation

ASTM C-208-95	Specifications for Cellulosic Fiber Insulating Board
ASTM C-209-92	Test Method for Cellulosic Fiber Insulating Board
ASTM C-272-91	Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions
ASTM C-36	Specification for Gypsum Wallboard
ASTM C-518-91	Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
ASTM C-578-92	Specification for Rigid, Cellular, Polystyrene Thermal Insulation
ASTM C-728-91	Specification for Perlite Thermal Insulation Board
ASTM D-5	Test Method for Penetration of Bituminous Materials
ASTM D-36	Test Method for Softening Point of Bitumen (Ring and Ball Apparatus)
ASTM D-312	Specification for Asphalt Used in Roofing
ASTM D-412-92	Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension
ASTM D-1621-94	Test Method for Compressive Properties of Rigid Cellular Plastics
ASTM D-1622	Test Method for Apparent Density of Rigid Cellular Plastics
ASTM D-1863	Specification for Mineral Aggregate Used on Built-Up Roofs
ASTM D-2126-94	Test Method for Response off Rigid Cellular Plastics to Thermal Humid Aging
ASTM D-2178	Standard Specification for Asphalt Glass Felts used in Roofing and Waterproofing
ASTM D-4601-94	Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing
ASTM D-5147	Sampling and Testing Modified Bituminous Sheet Material
CISPI	Cast Iron Soil Pipe Institute, Washington, D.C.
FM	Factory Mutual System, Norwood, Massachusetts
NRCA	National Roofing Contractors Association, Chicago, IL
SMACNA	Sheet Metal and Air Conditioning Contractors National Association

SDI	Steel Deck Institute, St. Louis, Missouri
SPIB	Southern Pine Inspection Bureau, Pensacola, Florida
UL	Underwriter's Laboratories, Inc., Northbrook, Illinois
FS HH-I-1972	Insulation Board, Polyisocyanurate
FS LLL-1-535B	Insulation Board, Thermal (Fiberboard)
WH	Warnock Hersey International, Inc., Middletown, Wisconsin

1.4 SUBMITTALS

- A. Submit under provisions of Section 01-33-00 - Submittals.
- B. Product Data: Provide manufacturer's specification data sheets for each product in accordance with Section 01-33-00.
- C. Provide approval letters from insulation manufacturer for use of their insulation within this particular roofing system type.
- D. Provide a sample of each insulation type.
- E. Shop Drawings
 - 1. Submit manufacturer's shop drawings indicating complete installation details of tapered insulation system, including identification of each insulation block, sequence of installation, layout, drain locations, roof slopes, thicknesses, crickets and saddles.
 - 2. Shop drawing shall include: Outline of roof, location of drains, complete board layout of tapered insulation components, thickness and the average "R" value for the completed insulation system.
- F. Certification
 - 1. Submit roof manufacturer's certification that insulation fasteners furnished are acceptable to roof manufacturer.
 - 2. Submit roof manufacturer's certification that insulation furnished is acceptable to roofing manufacturer as a

component of roofing system and is eligible for roof manufacturer's system warranty.

3. Submit certification that insulation and fastening system furnished is Tested and Approved by Factory Mutual for 1-90 Wind Up-Lift Requirements.

1.5 QUALITY ASSURANCE

- A. Fire Classification, ASTM E-108
- B. Submit certification that the roof system furnished is approved by Factory Mutual, Underwriters Laboratories or Warnock Hersey for external Fire E-108 Class 1A and that the roof system is adhered properly to meet or exceed 1-90.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.
- B. Store all insulation materials in a manner to protect them from the wind, sun and moisture damage prior to and during installation. Any insulation that has been exposed to any moisture shall be removed from the project site.
- C. Keep materials enclosed in a watertight, ventilated enclosure (i.e. tarpaulins).
- D. Store materials off the ground. Any warped, broken or wet insulation boards shall be removed from the site.

PART 2 - PRODUCTS

2.1 APPROVED EQUIVALENT

- A. Contractor must submit any product not specified a minimum five days before the bid date to Consultant in order for product to be considered for approval. The Consultant will notify Contractor in writing of decision to accept or reject request.

2.2 INSULATION MATERIALS

- A. Provide thicknesses of insulation as indicated, provide combination of types and thicknesses to provide a complete system.

1. TAPERED POLYISOCYANURATE ROOF INSULATION

- a. Qualities: Factory Tapered, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
 - 1. Taper Thickness: Minimum 1 in. at low points.
 - 2. Tapered Slope: 1/2 in. per foot.
 - 3. Average R-Value: Minimum 15.0.
- b. Source
 - 1. AC-Foam II by Atlas Roofing Corporation
 - 2. Paratherm by Siplast of Irving, Texas
 - 3. GAFTEMP Isotherm R by GAF
 - 4. Approved Equivalent
- c. Insulation board shall meet the following requirements
 - 1. UL, WH or FM listed under Roofing Systems
 - 2. Federal Specification HH-I-1972, Class 1
- d. Physical Properties
 - Dimensional Stability ASTM D2126 2% max.
 - Compressive Strength ASTM D1621 25 psi min.
 - Vapor Permeability ASTM E-96 1 perm max.
 - Foam Core Density ASTM D-1622 2.0 pcf min.
 - Water Absorption ASTM C209 <1%
 - R-Factor HR per inch Thickness ASTM C518 5.6 (Design Value)

2. RIGID POLYISOCYANURATE ROOF INSULATION

- a. Qualities: Rigid, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
 - 1. Thickness: 1 in.
 - 2. R-Value: Minimum 7.0
- b. Source
 - 1. AC-FoamII by Atlas Roofing Corporation
 - 2. Paratherm by Siplast of Irving Texas
 - 3. GAFTEMP Isotherm R by GAF

4. Approved Equivalent

- c. Insulation board shall meet the following requirements
 - 1. UL, WH or FM listed under Roofing Systems
 - 2. Federal Specification HH-I-1972, Class 1
- d. Physical Properties
 - Dimensional Stability ASTM D-2126 2% max.
 - Compressive Strength ASTM D-1621 25 psi min.
 - Vapor Permeability ASTM E-96 1 perm max.
 - Foam Core Density ASTM D-1622 2.0 pcf min.
 - Water Absorption ASTM C-209 <1%
 - R-Factor HR per inch
 - Thickness ASTM C-518 5.6 (Design Value)

PART 3 - EXECUTION

3.1 INSPECTION OF SURFACES

- A. Roofing contractor shall be responsible for preparing an adequate substrate to receive insulation.
 - 1. Verify that work which penetrates roof deck has been completed.
 - 2. Verify that wood nailers are properly and securely installed.
 - 3. Examine surfaces for defects, rough spots, ridges, depressions, foreign material, moisture, and unevenness.
 - 4. Do not proceed until defects are corrected.
 - 5. Do not apply insulation until substrate is sufficiently dry.
 - 6. Broom clean substrate immediately prior to application.
 - 7. Use additional insulation to fill depressions and low spots that would otherwise cause ponding water.
 - 8. Verify that temporary roof has been completed.

3.2 INSTALLATION

- A. Metal Roof Deck Insulation Attachment

For metal deck locations on a clean, swept, properly repaired deck substrate, install the following:

1. Approved insulation board shall be fully attached to the deck with an approved mechanical fastening system. As a minimum, the amount of fasteners shall be in accordance with manufacturer's recommendation for FM 1-90 approved system. Otherwise, a minimum of one fastener per two square feet shall be installed. Filler pieces of insulation require at least two fasteners per piece if size of insulation is less than four square feet.
2. Spacing pattern of fasteners shall be as per manufacturer's recommendations to meet FM requirements. Placement of any fastener from edge of insulation board shall be a minimum of three inches and a maximum of six inches. Screw penetration through metal deck shall be a minimum of 1"

3.4 CLEANING

- A. Remove debris and cartons from roof deck. Leave insulation clean and dry, ready to receive roofing membrane.

END OF SECTION

SECTION 07 54 00 - WIND VENTED 80 MIL PVC MEMBRANE ROOFING

PART 1 GENERAL

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.03 SUMMARY

- A. This Section includes the following:

1. Roof Demolition
2. Wind Vented 80 Mil PVC Roof Membrane System

- B. Related Sections include the following:

1. Division 6, Section 06-10-50 "Miscellaneous Carpentry"
2. Division 7, Section 07-22-00 "Roof and Deck Insulation"
3. Division 7, Section 07-62-00 "Sheet Metal Flashing"

1.04 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 for definition of terms related to roofing work not otherwise defined in this Section.

1.05 WORK INCLUDED

- B. This project involves re-roofing of all low slope roof areas the existing roof system on Building 148, Department of Veterans Affairs, Hampton, Virginia.
- C. Provide labor, materials, equipment and supervision to perform roof replacement as outlined in the Specifications and on the enclosed Drawings. The following is a brief summary of the work:

1. On all low slope roof areas: Remove gravel surfacing, pitch pockets, all curb and perimeter flashings, cants and edge metals, per specifications and details.
2. Remove existing roofing materials by cutting into small manageable sections and lowering material into a dumpster with a hoist and bucket or use of a covered chute.
3. Dispose of debris off-site in accordance with all local, state and federal requirements and applicable regulations.
4. Examine the roof deck surface and determine if it is in suitable condition for roof system installation. If unsuitable conditions are encountered, contact the Consultant. Examine for unsound

- material, incomplete work, or other conditions unsuitable for proper installation or performance of the insulation and membrane. Do not start insulation application until defective existing construction has been corrected.
5. For all low slope roof areas: Provide and install a complete WVRS (Wind Vented Roof System) Roofing Manufacturer's 80 mil PVC roofing system, metal products, flashings, PMMA flashing systems and specified flat fill and tapered insulations with all materials, labor and equipment necessary for and incidental to all roofing and related works as shown on the drawings and specified herein, and as approved in writing by Roofing Manufacturer's. All work shall be done by an approved contractor in a good and workmanlike manner. **WVRS Roof System Manufacturer shall issue a 30 year NDL labor and material warranty with a 100 mph wind warranty.**
 6. Provide Contractor's **three-year** and manufacturer's 30 year NDL roof system warranty for all roof areas, warranty to include all insulations, terminations and flashings and PMMA flashed through deck connections.

1.06 SUBMITTALS

- A. Submit a list of manufacturer names and products to be utilized for the following materials.
 1. **PVC Roofing Membrane**
 2. **PVC Flashing Membrane**
 3. **PVC Membrane Adhesive**
 4. **PMMA Flashing System**

1.07 QUALITY ASSURANCE

- A. Roofing Contractor/Applicator: Company specializing in PVC roof application with five years experience and currently listed as an Approved Contractor for the roof system selected. Obtain written certification from the manufacturer of the roofing system that the installing Contractor is approved for warranted installation of the specified system(s). Provide a copy of the manufacturer's certified applicator letter with the bid. The certified applicator letter must be signed by an officer of the WVRS Roofing Manufacturer, letter signed by factory or material sales representatives or distributors will not be accepted. Contractor and application personnel shall have been engaged and specializing in the installation of similar roofing systems, specifically PVC applications for at least five preceding years and shall have worked on five (5) projects of similar scope and materials to the work of this project.
- B. Roofing Membrane Manufacturer: There shall have been no formulation changes in the primary roofing membrane for 10 years prior to the beginning of this project. The roofing membrane must be manufactured in the USA. Membranes manufactured elsewhere shall not be considered. PVC membrane shall be obtained from a single manufacturer. Secondary materials (insulation, adhesives, fasteners, etc.) shall be by manufacturer of PVC membrane; or, as required by manufacturer of PVC

membrane. If secondary materials are provided by other manufacturers, they must be approved by the primary membrane manufacturer.

- C. Manufacturer's technical representative shall visit the site at job startup and a minimum of every other week during the installation of the roofing system for purposes of reviewing materials installation practices and adequacy of work in place. This representative shall not be the material manufacturer's sales representative, distributor's representative or contractor, but a representative of the technical department of the material manufacturer whose primary duty is roofing inspections for the roof systems manufacturer. After each inspection, a report, signed by the manufacturer's full time technical representative shall be submitted to the consultant within 5 working days. The report shall note overall quality of work, deficiencies and any other concerns, and recommended corrective action.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.
- B. Store materials on pallets and cover with tarps, which are securely fastened to the pallets. Do not store more materials on the roof than can be installed during that day's roofing.
- C. Certify that all of the materials supplied for the PVC membrane meet specified requirements. Certificates shall be signed by an official authorized to certify on behalf of the material supplier or product manufacturer and shall identify quantity and date or dates of shipment or delivery to which the certificates apply.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply roofing membrane during inclement weather or when air temperature may fall below 40 degrees F. Do not apply remove or apply roofing if the chance of precipitation is 30% or greater.
- B. Do not apply roofing membrane to damp, wet or frozen deck surface.
- C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- D. All products utilized shall be asbestos free.

1.10 SCHEDULING

- A. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes. Roof installation shall not start until the completion of wall repairs.

1.11 GENERAL REQUIREMENTS

- A. The Contractor shall be responsible for not overloading the roof.
- B. The Contractor will not disturb the existing roof top equipment unless required for the proper installation of the roof system and will be responsible for immediate repairs should they be disturbed.

1.12 WARRANTY

- A. The WVRs Roof System Manufacturer shall issue a 30 year NDL labor and material warranty with a 100 mph wind warranty and damage to work resulting from failure of roofing membrane or products they sell on this project. This shall be a single source warranty; multiple warranties from different manufacturers will not be accepted. Manufacturer's warranty shall cover the WVRs membrane, all through roof penetrations, PMMA flashings, insulations, terminations and edge metals, guarantee for sub-surface moisture removal in the twenty-year, no dollar limit warranty.
 - 1. If within the warranty period the roof system, as installed for its intended use in the normal climatic and environmental conditions of the facility, becomes non-watertight, shows evidence of moisture intrusion within the assembly, blisters, splits, tears, delaminates, separates at the seams, or shows evidence of excessive weathering due to defective materials or installation workmanship, the repairs or replacement of the defective and damaged materials of the roof assembly and correction of defective workmanship shall be the responsibility of the roof membrane manufacturer. All costs associated with the repair or replacement work shall be the responsibility of the roof membrane manufacturer.
 - 2. When the manufacturer or his approved applicator fail to perform the repairs within 72 hours of notification, emergency temporary repairs performed by others shall not void the warranty.
- B. **Provide thee-year Contractor's** Roofing Warranty for materials and installation. This shall apply to defects regardless of whether leaks are occurring. Defects may include fishmouths, splits, open laps, delamination, blisters, insulation voids, improper securement, improper detailing, and defects in sheet metal work.

PART 2 PRODUCTS

A. GENERAL

Furnish and install a complete Roofing Manufacturer's WV-80 mil PVC roofing system with all materials, labor and equipment necessary for and incidental to all roofing and related works as shown on the drawings and specified herein, and as approved in writing by Roofing Manufacturer. All work shall be done by an approved contractor in a good and workmanlike manner. Manufacturer shall issue a 30 year NDL labor and material warranty with a 100 mph wind warranty. The

warranty shall be provided by one manufacturer, no two or multiple party warranties will be accepted. Manufacturer's 30 year NDL Labor and Material Warranty shall also include all PMMA Resin Based Flashings and a Warranty to remove any/all sub-surface moisture.

B. System Description

1. Roofing system shall consist of a WV-80 mil PVC membrane loose laid over new flat fill and tapered insulation and existing built-up roofing system with 60 mil PVC flashings and PMMA Resin Based Flashings. The WV- Roofing System shall be mechanically fastened with air sealed details at all perimeters, base flashings and air sealed at all penetrations. **Air seal details at all perimeters, base flashing and penetrations must be approved in writing by the Roof System Manufacturer.** Minimum of two-inch membrane lap joints shall be heat welded. Equalizer valves shall be installed per Roofing System Manufacturer's specification and details.
2. The roofing system shall have been tested at a nationally recognized testing laboratory to withstand the minimum wind loads set forth in (ANSI.1-1982, The Standard Building Code, The Uniform Building Code, The BOCA national Building Code).
3. **The roofing manufacturer shall provide current UL-1879 Wind Resistance Testing with a minimum wind uplift rating of 130 psf over a 22 gauge steel deck.**
4. **The roofing contractor shall provide and install 7/16" WVRC Mat over existing gravel surfaced BUR.**
5. The roofing system shall meet the requirements for a Class A roof.

C. Acceptable Manufacturers

1. All material used in the Roofing Manufacturer's WV-80 mil PVC Roofing System shall be manufactured, supplied or approved by Roofing Manufacturer.
2. Basis for Design: Environmental Roof Components (ERC-WV-PVC-80 mill) 326 Brown's Cove Road, Ste D, Ridgeland, SC 29936.
3. Other Roof System Manufacturer's must meet or exceed all values, testing, warranties and inspection requirements as the Basis of Design Manufacturer's System as specified herein. Roofing System Manufacturer shall provide a minimum of five projects installed and completed within 50 miles of the Hampton Department of Veterans Affairs for the Consultant and Owner to review.

a. Materials

1. The roofing membrane shall be 80 mil PVC white Roofing Manufacturer's membrane, polyester reinforced.
2. Coated metal shall be minimum of 96 inch by 48 inch Roofing Manufacturer's Laminated Metal, white unreinforced laminated to minimum 24 gauge galvanized steel or as specified in section 07620 whichever is thicker. Coated aluminum of .050 thickness is required for all edge metals as approved by the Roofing Manufacturer.
3. Unreinforced flashing shall be supplied by Roofing Manufacturer.

4. Prefabricated inside and outside corners shall be supplied by Roofing Manufacturer.
5. Heat welder shall be Leister Triac 1A and/or Leister Variant or equal.
6. Seam sealant shall be supplied by Roofing Manufacturer.
7. Adhesive for bonding membrane to substrates such as masonry and metal or plastic pipes shall be supplied by Roofing Manufacturer.
8. Caulking shall be one or two part polyurethane of the highest grade available. Shall be supplied by Roofing System Manufacturer.
9. Fasteners shall be corrosion resistant screws or anchors of a type and length appropriate for fastening through the structural roof deck or into brick or concrete walls.
10. Separation sheet shall be of the type and thickness appropriate for the substrate over which the roofing membrane is to be installed. Separation layer integral with insulation is preferred.
11. Valves shall be spun aluminum-Pre-flashed Equalizer Valves or injected molded PVC.
12. Termination bar shall be extruded aluminum Roofing Manufacturer's Term Bar. Shall be supplied by Roof System Manufacturer.
13. Wood nailers shall be #2 or better lumber, pressure treated from termite and rot resistance with a salt based preservative; creosote or asphaltic type preservatives shall not be used.
14. Other materials shall be as hereafter specified or of the best grade for the proposed use as approved.

b. Physical Property of Membrane:

1. Color White: (top)/Grey/(bottom)
2. Roll Size: minimum of 78" wide x 108' long
3. Weight: 4.5 oz./ft² (nominal)
4. Thickness ASTM D-751: 45, 60, 80 mil (nominal)
5. Breaking Strength (minimum, lbs/in.) ASTM D-751 (Grab method): 300 x 200 lbs.
6. Seam Strength (minimum, % of breaking strength): ASTM D-638: 90%
7. Elongation @ Break (minimum, %) ASTM D-751: 17% x 19%①
8. Heat aging (minimum, %) ASTM D-3045: 80% x 80%①
9. Tear Strength (minimum, lbs.) ASTM D-751 (Tongue Method): 100 x 100 lbs.①
10. Low Temperature Bend ASTM D-2136: PASS (-40°)
11. Permeance ASTM E-96 (Procedure BW): 0.003 Perms
12. Dimensional Change (maximum %) ASTM D-1204 (@ 176° F, 6 hrs): 0.3%
13. Dimensional Change (maximum %) ASTM D-1204 (@ 212° F, 1 hr): 1.0%
14. Water Immersion (wght. change, Max %) ASTM D-570 (@ 158° F, 1 week): 1.0%

15. Hydrostatic Resistance (min, psi) ASTM D-751 (method D): 400 psi
16. Ozone Resistance ASTM D-1149: PASS
17. EMMAQUA ® Test, DSET ASTM E-838: PASS (2.7 million Langleys)
18. This data is reported in Warp X Fill values.
19. Note: The physical properties listed above are typical values achieved in the manufacture of the "ERC-C3" membrane. For specific minimum specification values contact ERC.
20. EMMAQUA ® Test Method is a registered trade name of DSET Laboratories, Inc.
21. Shall be resistant to fuel oils, fats, oil, grease, bitumen/asphalt and coal tar pitch.

C. Liquid Applied Through Deck and Pipe Flashings

Catalyzed PMMA resin, with encapsulated polyester fleece reinforcement, which is VOC compliant and solvent free. Apply in accordance with the roofing membrane manufacturer's printed application instructions. Must be included and covered in the roof system manufacturer's 30 year, full system, no dollar limit warranty. ONLY PMMA RESIN BASED PRODUCTS SHALL BE USED FOR FLASHING OF ROOF THROUGH DEK PENETRATIONS. NO PVC PRODUCTS SHALL BE ALLOWED FOR FLASHING IN LIEU OF PMMA RESIN BASED PRODUCTS.

1. Basis of Design: Quick Flash SW reinforced flashing system by ERC, or approved equal.
2. Catalyst: A reactive agent used to induce curing of polymethylmethacrylate (PMMA) resins.
3. Resin for Flashing Applications: A multi-component, flexible, polymethylmethacrylate (PMMA) based resin combined with a thixotropic agent for use in combination with fleece fabric to form a monolithic, reinforced flashing membrane.
4. Fleece for Membrane and Flashing Reinforcement: A non-woven, 100 g/m2, needle-punched polyester fabric reinforcement as supplied by the membrane system manufacturer.
5. Thixotropic Agent: a liquid additive used to increase the viscosity of the PMMA resin products, allowing the resins to be applied over sloped areas.

D. EXECUTION

1. Inspection

- a. The applicator shall examine the substrate, roof deck and related surfaces and verify that there are no conditions such as air infiltration, inadequate anchorage, foreign materials, moisture ridges or other unevenness which would prevent the satisfactory installation of the roofing system.
- b. Any conditions requiring correction or completion shall be corrected or completed prior to the installation of the roofing system. Notify (Consultant and/or owner) in writing of unacceptable conditions.

- c. Roofing Manufacturer's technical representative shall visit the site at job startup and a minimum of every other week during the installation of the roofing system for purposes of reviewing materials installation practices and adequacy of work in place. This representative shall not be the material manufacturer's sales representative, distributor's representative or contractor but a roofing inspector of the material manufacturer whose primary duty is roofing inspections for the roof systems manufacturer. After each inspection, a report, signed by the manufacturer's technical representative shall be submitted to the consultant within 3 working days. The report shall note overall quality of work, deficiencies and any other concerns, and recommended corrective action.

2. Preparation

- a. Surfaces on which the roofing system is to be applied shall be clean, smooth, free of fins, sharp edges, loose and foreign materials, oil, grease, and coal tar pitch.
- b. Where a portion of the existing roof system or deck must be replaced, the replacement work shall include sealing to the existing membrane prior to the installation of insulation or separation layer and the roofing system.
- c. Where installation is over an existing gravel surfaced roof, the gravel surface shall be swept or vacuumed clean of all loose gravel, dirt and debris. Blisters and other membrane defects shall be cut and repaired.
- d. Standing water, snow or ice shall be removed from the substrate prior to installation of the roofing system.
- e. Wood nailers at least 3-1/2 inches wide and matching the thickness of the insulation shall be installed at the perimeter of the roof and around penetrations as shown on the drawings. Wood nailers shall be fastened to the deck not more than 30 inches on center to resist a minimum force of 175 pounds per linear foot in any direction. A minimum of 2 anchors shall be used to fasten each length of nailer to the deck. Air seals shall be installed between wood nailers and the deck as shown on Roofing Manufactures approved drawings.

3. Installation

- a. Air Seals - The monolithic deck shall be sealed airtight at all penetrations and at the roof perimeter as detailed on Roofing Manufactures approved drawings.
- b. Separation layer-7/16" WVRS Matt
- c. Flashing - Flashing at the roof perimeter and at all penetrations, including drains, pipes, conduits, curbs, walls, expansion joints, and vents shall be installed as shown on Roofing Manufactures approved drawings. Flashing shall be fabricated from the roofing membrane, coated metal and/or unreinforced flashing material as indicated on the drawings. Prefabricated inside and outside corners shall be used where possible. Coated metal base flashing and gravel stop shall be fastened to wood nailers with minimum 3/8 inch head galvanized annular ring nails or equal 6 inches maximum on center and staggered 1 inch. All joints in coated metal shall be butted,

leaving $\frac{1}{4}$ to $\frac{1}{2}$ inch space between pieces and shall be seamed using minimum 6 inch wide unreinforced flashing material over 2 inch wide tape as shown in the drawings. All flashing shall be sealed to both the penetration and the monolithic deck as shown on Roofing Manufactures approved drawings. Flashing shall be installed as roof membrane installation progresses. All through deck pipe and conduit penetrations shall be flashed with manufacturer's PMMA resin based flashing system, per specifications and details.

Roofing Membrane - Membrane shall be unrolled and positioned without stretching as close to and parallel with roof edges as possible. Adjoining 120 inch wide or wider roofing membrane shall be unrolled perpendicular to the continuous joint of the thermal insulation and be positioned without stretching; lapping the pervious edges a minimum of 2 inches. End joints shall be staggered. The membrane shall then be allowed to relax for $\frac{1}{2}$ hour before sealing. The clean and dry laps shall be welded continuously 1-1/2 inches wide using heat. Excess heat shall be kept away from the insulation of separation layer. The roofing membrane shall be heat welded 1-1/2 inches wide to all perimeter and base flashings on the plane of the roof as shown on the approved drawings. All seams shall be tested with a probe for integrity. T-joints, seams with exposed fabric, and seams at penetrations or other details shall be sealed with seam sealer on the day they are made.

- d. The Applicator shall check all welded seams for continuity using a rounded screwdriver. Visible evidence that welding is proceeding correctly is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of dark grey material from the underside of the top membrane. On-site evaluation of welded seams shall be made daily by the Applicator at locations as directed by the Owner's Representative or Membrane Manufacturer's representative. One inch (25 mm) wide cross-section samples of welded seams shall be taken at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of the weld. Each test cut shall be patched by the Applicator at no extra cost to the Owner.
- e. Valves -Location of valves shall be as indicated on drawings provided by Roofing Manufactures prior to roof installation
- f. Temporary Seals - The roofing membrane shall be sealed to the monolithic roof deck at the end of each day or at the onset of inclement weather to prevent water from flowing into the completed roofing system. Temporary seals shall be removed upon resumption of work.
- g. Where equipment pads, wood sleepers or walkway slabs are to be installed over the roofing membrane, an additional layer of the roofing membrane shall be installed between the roofing membrane and the pad, sleeper or slab. Due caution shall be exercised to prevent roofing membrane damage during placement.

SPECIAL NOTE: HOT-AIR WELDING OF SEAM OVERLAPS

All seams shall be hot-air welded. Seam overlaps should be 3 inches (75 mm) wide when automatic machine-welding and 4 inches (100 mm) wide when hand-welding, except for certain details.

Welding equipment shall be provided by or approved by Membrane Manufacturer. All mechanics intending to use the equipment shall have successfully completed a training course provided by a Membrane Manufacturer Technical Representative prior to welding.

All membrane to be welded shall be clean and dry.

Hand-Welding

Hand-welded seams shall be completed in two stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.

The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of hot air during the final welding.

The nozzle shall be inserted into the seam at a 45 degree angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow," the hand roller is positioned perpendicular to the nozzle and rolled lightly. For straight seams, the 1-1/2 inch (40 mm) wide nozzle is recommended for use. For corners and compound connections, the 3/4 inch (20 mm) wide nozzle shall be used.

Machine Welding

Machine welded seams are achieved by the use of Membrane Manufacturer's automatic welding equipment. When using this equipment, Membrane Manufacturer's instructions shall be followed and local codes for electric supply, grounding and over current protection observed. Dedicated circuit house power or a dedicated portable generator is recommended. No other equipment shall be operated simultaneously off the generator.

Metal tracks may be used over the deck membrane and under the machine welder to minimize or eliminate wrinkles.

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SECTION 07 62 00 - SHEET METAL FLASHING

PART 1 - GENERAL

RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.13 SUMMARY

- C. This Section includes the following:
1. Sheet metal flashing and sheet metal components.
 2. Sealants.
- D. Related Sections include the following:
3. Division 6, Section 06-10-50 "Miscellaneous Carpentry"
 4. Division 7, Section 07-54-00 "Wind Vented 80 MIL PVC Membrane Roofing"

1.14 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 for definition of terms related to roofing work not otherwise defined in this Section.
- B. Sheet Metal Terminology: Refer to SMACNA'S "Architectural Sheet Metal Manual" for terms related to sheet metal work not otherwise defined in this Section.

1.04 WORK INCLUDED

- A. Provide labor, materials, equipment and supervision to perform the installation of the sheet metal flashing as outlined in the Specifications and on the enclosed Drawings. The following is a brief summary of the Work:
1. Provide and install new surface and throughwall mounted counterflashings and counterflashing receivers, counterflashing extensions, HVAC curb and sleeper cap flashings, overflow scuppers per specifications and details. Cleats are to be continuous and a minimum of .063 aluminum. The cleats are to be fastened at a minimum of 16" O. C. All metals and cleats are to be installed as specifications and details. New counterflashings and counterflashing extensions are to be manufactured using .050 aluminum.
 2. All metal products used must be approved by the membrane manufacturer to insure compatibility with membrane system and coverage under the manufacturer's warranty.

3. Install metal in strict accordance with detail drawings and manufacturer's requirements.
4. Install metal butt-joints with a maximum of 1/4" gap.
5. Install beveled cover plates (or sealed drainage plates min. 12" wide) to all coping butt-joints

1.05 SUBMITTALS

- A. Submit a list of manufacturer names and products to be utilized for the following materials.
 1. Color chart for Sheet Metal Components.
 2. Manufacturer's Color Chart for Sealant.

1.06 QUALITY ASSURANCE

- A. Applicator: Company specializing in sheet metal flashing installation with five years experience with work similar in material, design, and complexity.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials with manufacturer's protective film on the exposed side of all sheet metal. Remove protective film only after completion of the installation.
- B. Store materials on pallets and cover with tarps which, are securely fastened to the pallets. If materials are stored on the roof they must be placed on a protection board to prevent damage to the membrane.

1.08 SCHEDULING

- A. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

1.09 GENERAL REQUIREMENTS

- A. The Contractor shall be responsible for not overloading the roof.
- B. The Contractor will not disturb the existing roof top equipment unless required for the proper installation of the roof system and will be responsible for immediate repairs should they be disturbed.

1.10 WARRANTY

- A. Provide three year Contractor's Warranty for materials and installation. This shall apply to defects regardless of whether leaks

are occurring. Defects may include but are not limited to improper securement, improper detailing, and defects in sheet metal work.

PART 2 PRODUCTS

2.01 SHEET METAL COMPONENTS

- A. HVAC sleeper caps and curb counterflashings: .050 aluminum, with fluoropolymer finish (minimum 70% resin), color to be selected by Owner from a standard color chart.
- B. Cleats: .063 Aluminum, with mill or fluoropolymer (minimum 70% resin) finish.
- C. Through wall counterflashings, counterflashing receivers and reglet mounted counterflashings, counterflashing extensions, overflow scuppers, scupper liners and flanges: .050 aluminum.

2.02 ACCESSORIES

- A. Miscellaneous Fasteners: Provide fasteners as indicated in the drawings. All fasteners shall be corrosion resistant.
- B. Polyurethane Sealant: Single component polyurethane sealant meeting minimum requirements of ASTM C920, Type S, Grade NS, Class 25 and Use NT, M and A; color to be selected by Owner from Manufacturers Standard Color Chart.

PART 3 EXECUTION

3.01 PROTECTION

- A. Protect building surfaces against damage from sheet metal work.
- B. Where work must continue over roof membrane, protect surfaces.

3.02 FABRICATION - GENERAL

- A. Field verify all dimensions prior to fabricating sheet metal components.
- B. Form sheet metal without excessive buckling and tool marks. All exposed edges shall be folded back to form a hem.
- C. All counterflashing shall be installed into a separate counterflashing receiver unless otherwise indicated on the drawings.

- D. Provide movement joints at a maximum of 10 feet with no joints located within 24 inches of corners. Provide back-up plates at all splices and seal with a 3/4 inch bead of sealant on both sides of the splice.

3.03 SURFACE PREPARATION

- A. Examine substrate prior to installation of sheet metal work. Remove and dispose of all materials from the substrate to be covered which deviate in plane or which may result in an uneven or unlevel finished product. Remove and dispose of all asbestos containing material in accordance with applicable laws and regulations.
- B. Prime all embedded edge metal in accordance with roof manufacturer's recommendations.
- C. Beginning installation indicates acceptance of substrate.

3.04 INSTALLATION - GENERAL

- A. Provide sheet metal flashing in accordance with the enclosed drawings.
- B. Unless otherwise indicated, secure all sheet metal in accordance with the fastener schedule in the Drawings.
- C. Coordinate installation of counterflashings with installation of assemblies to be protected by counterflashing. Lap counterflashing a minimum of 3 inches, apply sealant along the top edge of surface-mounted counterflashing and tool to facilitate drainage.
- D. Notch and lap all inside corners and joints, weld all intersections. Notch and seam all outside corners and weld. Apply manufacturer's touch up primer and paint over all welded seams.
- E. Apply color matching sealant over the heads of all exposed fasteners on the exterior wall surfaces.

3.05 CLEANING

- A. Remove and dispose of all protective film on new metal surfaces, remove any markings from finished surfaces. Consult manufacturer of surfaces for cleaning advice and conform to their instructions.
- B. Apply color matching touch-up paint to any scratches as recommended by the sheet metal manufacturer.

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ROOF REPLACEMENT
BUILDING 148
VA MEDICAL CENTER
HAMPTON, VA

PROJECT 590-13-148